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 NEWS  6  MAY 11  KOREAPAT updates resume
 NEWS  7  MAY 19  Derwent World Patents Index to be reloaded and enhanced
 NEWS  8  MAY 30  IPC 8 Rolled-up Core codes added to CA/CAplus and
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 NEWS  9  MAY 30  The F-Term thesaurus is now available in CA/CAplus
 NEWS 10  JUN 02  The first reclassification of IPC codes now complete in
                  INPADOC
 NEWS 11  JUN 26  TULSA/TULSA2 reloaded and enhanced with new search and
                  and display fields
 NEWS 12  JUN 28  Price changes in full-text patent databases EPFULL and PCTFULL
 NEWS 13  JUl 11  CHEMSAFE reloaded and enhanced
 NEWS 14  JUl 14  FSTA enhanced with Japanese patents
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=> s dugan/au
L1            0 DUGAN/AU

=> s dugan?/au
L2         1764 DUGAN?/AU

=> s said?/au
L3         8944 SAID?/AU

=> s maynard?/au
L4         2653 MAYNARD?/AU

=> s (l2 or l3 or l4) and (fs or femtosecond or picosecond or ps or ultrashort or ultra-short or u
L5          154 (L2 OR L3 OR L4) AND (FS OR FEMTOSECOND OR PICOSECOND OR PS OR
                ULTRASHORT OR ULTRA-SHORT OR ULTRA(2W) SHORT)

=> s l5 and waveguid?
L6           16 L5 AND WAVEGUID?

=> d all 1-16

L6   ANSWER 1 OF 16  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:347530  CAPLUS <<LOGINID::20060804>>
ED   Entered STN:  17 Apr 2006
TI   Significant improvement of the 41.8 nm Xe8+ laser using gas-filled
     capillary tubes
AU   Mocek, T.; Sebban, S.; Bettaibi, I.; Vorontsov, V.; Cros, B.;
       ***Maynard, G.***  ; McKenna, C. M.; Spence, D. J.; Gonsalves, A. J.;
     Hooker, S. M.
CS   Laboratoire d'Optique Appliquee, ENSTA-Ecole Polytechnique, Chemin de la
     Huniere, Palaiseau, 91761, Fr.
SO   Institute of Physics Conference Series (2005), 186(X-Ray Lasers 2004),
     215-220
     CODEN: IPCSEP; ISSN: 0951-3248
PB   Institute of Physics Publishing
DT   Journal
LA   English
CC   73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB   We report on significant improvement of the 41.8 nm Xe8+ collisionally
     excited OFI XUV laser output achieved by means of multimode guiding of
     high-intensity,   ***femtosecond***   laser pulses in a gas-filled dielec.
     capillary tube.  Capillaries of various designs and lengths have been
     investigated and compared to gas cells of the same length.  Under optimum
     conditions the lasing signal from the capillary was about an order of
     magnitude higher than that from a comparable gas cell.  Numerical
     simulations of the propagation of the pump laser pulse in the capillary
     revealed that this enhancement is due to reflections from the capillary
     wall which made it possible to increase the length of the Xe8+ plasma
     column over the whole length of the   ***waveguide***   .  The far-field
     pattern of the capillary-driven 41.8 nm laser has been measured.
ST   gas filled capillary tube xenon laser significant improvement
IT   INDEXING IN PROGRESS
IT   Glass
        (significant improvement of 41.8 nm xenon (8+) laser using gas-filled
        capillary tubes)
RE.CNT  21    THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Butler, A; Phys Rev Lett art no 205001 2003, V91 CAPLUS
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L6 ANSWER 2 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:347475 CAPLUS <<LOGINID::20060804>>
ED Entered STN: 17 Apr 2006
TI Progress on soft-x-ray lasers at LOA
AU Sebban, S.; Mocek, T.; Bettaibi, I.; Zeitoun, Ph.; Faivre, G.; Cros, B.; ***Maynard, G.*** ; Dubau, J.; Butler, A.; Gonzalves, A. J.; McKenna, C. M.; Spence, D. J.; Hooker, S. M.; Valentin, C.; Balcou, Ph.; le Pape, S.; Ros, D.; Upcraft, L. M.; Kazamias, S.; Klisnick, A.; Jamelot, G.; Rus, B.
CS Laboratoire d'Optique Appliquee, ENSTA-Ecole Polytechnique, Palaiseau, 91761, Fr.
SO Institute of Physics Conference Series (2005), 186(X-Ray Lasers 2004), 57-64
CODEN: IPCSEP; ISSN: 0951-3248
PB Institute of Physics Publishing
DT Journal
LA English
CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We report a survey of the Laboratoire d'Optique Appliquee activities in the field of x-ray lasers. The main interest is focussed on the collisional Optical field Ionization (OFI) soft x-ray lasers. We will present recent characterization of the sources as well as dramatic improvement of their performances using the ***waveguiding*** technique. We will also show recent results consisting in amplifying a High order Harmonic Generation (HHG) beam into an OFI plasma amplifier; we produced a highly satd., energetic, sub- ***ps*** , fully coherent and fully polarised tabletop x-ray laser operating at 10 Hz.
ST LOA soft X ray laser progress
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Butler, A; Phys Rev Lett 2002, V89, P185003 MEDLINE
(2) Butler, A; Phys Rev Lett 2003, V91, P205001 MEDLINE
(3) Dorchies, F; Phys Rev Lett 1999, V82, P4655 CAPLUS
(4) Durfee, G; Phys Rev Lett 1993, V71, P2409
(5) Ehrlich, Y; Phys Rev Lett 1996, V77, P4186 CAPLUS
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L6 ANSWER 3 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:318033 CAPLUS <<LOGINID::20060804>>
ED Entered STN: 06 Apr 2006
TI ***Waveguide*** electro-optic modulator in fused silica fabricated by ***femtosecond*** laser direct writing and thermal poling
AU Li, Guangyu; Winick, Kim A.; ***Said, Ali A.*** ; ***Dugan, Mark*** ; Bado, Philippe
CS Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, 48109, USA
SO Optics Letters (2006), 31(6), 739-741
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB An integrated electro-optic ***waveguide*** modulator is demonstrated in bulk fused silica. A Mach-Zehnder interferometer ***waveguide*** structure is fabricated by direct writing with a ***femtosecond*** laser followed by thermal poling. A 20.degree. electro-optic phase shift is achieved at an operating wavelength of 1.55 .mu.m with an applied voltage of 400 V and an interaction length of 25.6 mm, which correspond to an estd. effective electro-optic coeff. of 0.17 pm/V for the TE-polarized

mode.
ST laser direct writing thermal poling silica ***waveguide*** EO modulator
IT INDEXING IN PROGRESS
IT Refractive index
(***waveguide*** electro-optic modulator in fused silica fabricated by ***femtosecond*** laser direct writing and thermal poling)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L6 ANSWER 4 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:207224 CAPLUS <<LOGINID::20060804>>
DN 142:419565
ED Entered STN: 09 Mar 2005
TI Dramatic enhancement of XUV laser output using a multimode gas-filled capillary ***waveguide***
AU Mocek, T.; McKenna, C. M.; Cros, B.; Sebban, S.; Spence, D. J.; ***Maynard, G.*** ; Bettaibi, I.; Vorontsov, V.; Gonsavles, A. J.; Hooker, S. M.
CS Laboratoire d'Optique Appliquee (LOA), ENSTA-Ecole Polytechnique, Palaiseau, 91761, Fr.
SO Physical Review A: Atomic, Molecular, and Optical Physics (2005), 71(1), 013804/1-013804/5
CODEN: PLRAAN; ISSN: 1050-2947
PB American Physical Society
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The authors report a significant increase of the output of a 41.8-nm Xe8+ laser achieved by multimode guiding of high-intensity ***femtosecond*** laser pulses in a gas-filled dielec. capillary tube. The optimized lasing signal from a 15-mm-long capillary was nearly an order of magnitude higher than that from a gas cell of the same length. Simulations of the propagation of the pump laser pulse in the capillary confirmed that this enhancement is due to reflections from the capillary wall, which increase the length of the Xe8+ plasma column generated. The influence of gas pressure and focusing position on the lasing is also presented.
ST xenon ion vacuum UV laser capillary ***waveguide*** ; x ray laser ultrasoft xenon ion capillary ***waveguide***
IT Capillary tubes
Gas lasers
Optical ***waveguides***
(dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide***)
IT ***Waveguides***
(laser; dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide***)
IT X-ray lasers
(soft-; dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide***)
IT UV lasers
(vacuum-UV; dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide***)
IT Lasers
(***waveguide*** ; dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide***)

IT 14067-00-6, Xenon ion(8+), uses
RL: DEV (Device component use); USES (Uses)
(XUV laser; dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide***)
IT 7439-90-9, Krypton, uses 12385-13-6, Hydrogen atom, uses
RL: DEV (Device component use); USES (Uses)
(dramatic enhancement of XUV laser output using multimode gas-filled capillary ***waveguide*** contg.)
RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L6 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:133357 CAPLUS <<LOGINID::20060804>>
DN 143:335521
ED Entered STN: 16 Feb 2005
TI Progress on collisionally pumped optical-field-ionization soft X-ray lasers
AU Sebban, Stephane; Mocek, Tomas; Bettaibi, I.; Cros, B.; ***Maynard,*** *** G.*** ; Butler, A.; Gonzalves, A. J.; McKenna, C. M.; Spence, D. J.; Hooker, S. M.; Upcraft, L. M.; Breger, P.; Agostini, P.; Le Pape, S.; Zeitoun, P.; Valentin, C.; Balcou, P.; Ros, D.; Kazamias, S.; Klisnick, A.; Jamelot, G.; Rus, B.; Wyart, J. F.
CS Laboratoire d'Optique Appliquee (LOA), ENSTA-Ecole Polytechnique, Palaiseau, 91761, Fr.
SO IEEE Journal of Selected Topics in Quantum Electronics (2004), 10(6), 1351-1362
CODEN: IJSQEN; ISSN: 1077-260X
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The authors present the status of optical field ionization soft x-ray lasers. The amplifying medium is generated by focusing a high-energy circularly polarized 30- ***fs*** 10-Hz Ti: sapphire laser system in a gaseous medium. Using Xe or Kr, strong laser emission at 41.8 and 32.8 nm, resp., was obsd. After presenting the basis of the physics, the authors present recent characterization of the sources as well as dramatic improvement of their performances using the ***waveguiding*** technique.
ST soft x ray laser krypton xenon collisionally pumped photoionization; vacuum UV laser krypton xenon collisionally pumped photoionization
IT ***Waveguides***
(laser; progress on collisionally pumped optical-field-ionization soft x-ray lasers)
IT Photoionization
(progress on collisionally pumped optical-field-ionization soft x-ray lasers)
IT X-ray lasers

(soft; progress on collisionally pumped optical-field-ionization soft x-ray lasers)
IT Capillary vessel
(vacuum-UV ***waveguide*** ; progress on collisionally pumped optical-field-ionization lasers contg.)
IT UV lasers
(vacuum-UV; progress on collisionally pumped optical-field-ionization lasers)
IT Optical ***waveguides***
(vacuum-UV; progress on collisionally pumped optical-field-ionization lasers contg.)
IT Lasers
(***waveguide*** ; progress on collisionally pumped optical-field-ionization soft x-ray lasers)
IT 7439-90-9, Krypton, uses 7440-63-3, Xenon, uses 14067-00-6, Xenon 8+, uses 16249-23-3, Krypton 8+, uses
RL: DEV (Device component use); USES (Uses)
(progress on collisionally pumped optical-field-ionization soft x-ray lasers contg.)
RE.CNT 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L6 ANSWER 6 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:52500 CAPLUS <<LOGINID::20060804>>
DN 142:338713
ED Entered STN: 20 Jan 2005
TI Optical microsystem for analyzing engine lubricants
AU Scott, Andrew J.; Mabesa, Jose R., Jr.; Gorsich, David; Rathgeb, Brian; ***Said, Ali A.*** ; ***Dugan, Mark*** ; Haddock, Tom F.; Bado, Philippe W.
CS U.S. Army Tank-Automotive Research, Development and Engineering Command, National Automotive Center, Warren, MI, 48937-5000, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5590(Sensors for Harsh Environments), 122-127
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal

LA English
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
AB It is possible to dramatically improve the performance, reliability, and maintainability of vehicles and other similarly complex equipment if improved sensing and diagnostics systems are available. Each year military and com. maintenance personnel unnecessarily replace, at scheduled intervals, significant amts. of lubricant fluids in vehicles, weapon systems, and supporting equipment. Personnel draw samples of fluids and send them to test labs for anal. to det. if replacement is necessary. Systematic use of either on-board (embedded) lubricant quality anal. capabilities will save millions of dollars each year in avoided fluid changes, saved labor, prevented damage to mech. components while providing assocd. environmental benefits. This paper discusses the design, the manufg., and the evaluation of robust optical sensors designed to monitor the condition of industrial fluids. The sensors reported are manufd. from bulk fused silica substrates. They incorporate three-dimensional microfluid circuitry side-by-side with three-dimensional wave guided optical networks. The manufg. of the optical ***waveguides*** are completed by using a direct-write process based on the use of ***femtosecond*** laser pulses to locally alter the structure of the glass substrate at the nano-level. The microfluid circuitry is produced by using the same ***femtosecond*** laser based process, followed by an anisotropic wet chem. etching step. Data are presented regarding the use of these sensors to monitor the quality of engine oil and possibly some other vehicle lubricants such as hydraulic oil.
ST quality control engine oil optical sensor
IT Lubricating oils
(crankcase; optical microsystem for analyzing engine lubricants)
IT Optical sensors
Quality control
(optical microsystem for analyzing engine lubricants)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bado, P; Laser Focus 2000
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L6 ANSWER 7 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:719172 CAPLUS <<LOGINID::20060804>>
DN 143:15364
ED Entered STN: 03 Sep 2004
TI Manufacturing by laser direct-write of three-dimensional devices containing optical and microfluidic networks
AU ***Said, Ali A.*** ; ***Dugan, Mark*** ; Bado, Philippe; Bellouard, Yves; Scott, Andrew; Mabesa, Jose R., Jr.
CS Translume, Inc., Ann Arbor, MI, 48108-2222, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5339(Photon Processing in Microelectronics and Photonics III), 194-204
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal; General Review
LA English
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A review. The index of refraction of most glasses can be permanently changed by exposure to ***femtosecond*** laser pulses. This effect allows for the fabrication of various two-dimensional or three-dimensional light guiding structures. Passive and active optical devices have been manufd. using this ***femtosecond*** direct-write technique. A closely related technique has recently been demonstrated to manuf. three-dimensional microfluidic networks. We describe recent work at Translume and RPI in ***femtosecond*** direct write to produce devices which incorporate on a single glass chip optical network with microfluidic network.
ST review manufg laser direct write app optical microfluidic network
IT Optical ***waveguides***
Refractive index
(manufg. by laser direct-write of three-dimensional devices contg. optical and microfluidic networks)
IT Glass, uses

RL: DEV (Device component use); USES (Uses)
(manufg. by laser direct-write of three-dimensional devices contg. optical and microfluidic networks)

IT Fluids
(microfluids; manufg. by laser direct-write of three-dimensional devices contg. optical and microfluidic networks)

IT Laser radiation
(pulsed; manufg. by laser direct-write of three-dimensional devices contg. optical and microfluidic networks)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(12) Vogel, W; Glass Chemistry

L6 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:129541 CAPLUS <<LOGINID::20060804>>

ED Entered STN: 20 Feb 2003

TI Method of index trimming a ***waveguide*** and apparatus formed of the same

IN ***Dugan, Mark*** ; Clark, William; ***Said, Ali A.*** ; ***Maynard, Robert L.*** ; Bado, Philippe

PA Translume, Inc., USA

SO U.S. Pat. Appl. Publ.
CODEN: USXXCO

DT Patent

LA English

IC ICM G02B006-18
ICS G02B006-26; G02B006-10

INCL 385124000; 385027000; 385039000; 385146000

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003035640	A1	20030220	US 2001-930929	20010816
	US 6768850	B2	20040727		
PRAI	US 2001-930929		20010816		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 20030035640	ICM	G02B006-18
	ICS	G02B006-26; G02B006-10
	INCL	385124000; 385027000; 385039000; 385146000
	IPCI	G02B0006-18 [ICM,7]; G02B0006-26 [ICS,7]; G02B0006-10 [ICS,7]
	IPCR	G02B0006-10 [N,A]; G02B0006-10 [N,C*]; G02B0006-12 [N,A]; G02B0006-12 [N,C*]; G02B0006-122 [I,A]; G02B0006-122 [I,C*]; G02B0006-125 [I,A]; G02B0006-125 [I,C*]; G02B0006-13 [I,A]; G02B0006-13 [I,C*]
	NCL	385/124.000
	ECLA	G02B006/122; G02B006/125; G02B006/13

AB A method of using a beam of ***ultra*** - ***short*** laser pulses, having pulse durations below 10 ***picoseconds*** , to adjust an optical characteristic within an optical medium is provided. The beams would have an intensity above a threshold for altering the index of refraction of a portion of the optical medium. The beams could be selectively applied to the optical medium and any structures formed or existing therein. Thus, the beam could be moved within a ***waveguide*** in the optical medium to alter the index of refraction of the ***waveguide*** forming any number of different longitudinal index of refraction profiles. The beam could also be moved within the optical medium near the ***waveguide*** to alter an effective index of refraction of a signal traveling within the ***waveguide*** . The techniques described can be used to improve, alter or correct performance

of ***waveguide*** -based optical devices, such as arrayed ***waveguide*** gratings and cascaded planar ***waveguide*** interferometers.

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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(3) Davis; Optics Letters 1996, V21(21), P1729 CAPLUS
(4) Dugan; US 6628877 B2 2003
(5) Herman; Applied Surface Science 2000, V154-155, P577 CAPLUS
(6) Hill; Journal of Lightwave Technology 1997, V15(8), P1263 CAPLUS
(7) Homoelle; Optics Letters 1999, V24(18), P1311 CAPLUS
(8) Kashyap; US 6104852 A 2000 CAPLUS
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(12) Miura; Appl. Phys. Lett 1997, V71(23), P3329 CAPLUS
(13) Mourou; US 5656186 A 1997
(14) Nunnally; US 5761181 A 1998 CAPLUS
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(16) Rockwell; US 5596671 A 1997 CAPLUS
(17) Shihoyama; Micromachining with Ultrafast Lasers
(18) Sikorski; Laser Microfabrication 2000, P1
(19) Streltsov; Optics Letters 2001, V26(1), P42 CAPLUS
(20) Takada; Optics Letters 2001, V26(2), P64
(21) Yamada; Optics Letters 2001, V26(1), P19 CAPLUS

L6 ANSWER 9 OF 16 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:55017 CAPLUS <<LOGINID::20060804>>
DN 134:287433
ED Entered STN: 23 Jan 2001
TI Micromachining with ultrafast lasers
AU Shihoyama, Kazuhiko; Furukawa, A.; Bado, Philippe; ***Said, Ali A.***
CS Hoya-Continuum, Shinjuku-ku, Tokyo, 160, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2000), 4088(Laser Precision Microfabrication), 140-143
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57

AB Conventional laser machining is based on continuous-wave or long-pulse lasers. With these lasers, thermal diffusion limits the accuracy and the reproducibility of the machining process. Laser-matter interaction is fundamentally different in the ultrafast (***femtosecond***) regime. This discovery has opened the way for generalized fine laser micromachining.

ST micromachining machining ultrafast laser
IT Machining
Micromachining
(laser; micromachining with ultrafast lasers)
IT Heat transfer
Optical ***waveguides***
(micromachining with ultrafast lasers)
IT Borosilicate glasses
Chalcogenide glasses
Fluoride glasses
Silicate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(micromachining with ultrafast lasers)
IT Copper alloy, base
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(micromachining with ultrafast lasers)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(micromachining with ultrafast lasers)

L6 ANSWER 10 OF 16 INSPEC (C) 2006 IET on STN
AN 2006:8980503 INSPEC <<LOGINID::20060804>>
TI Interleave filter based on coherent optical transversal filter

AU Mizuno, T.; ***Saida, T.*** ; Kitoh, T.; Shibata, T.; Inoue, Y. (NTT Photonics Labs., NTT Corp., Kanagawa, Japan)

SO Journal of Lightwave Technology (July 2006), vol.24, no.7, p. 2602-17, 42 refs.
CODEN: JLTEDG, ISSN: 0733-8724
SICI: 0733-8724(200607)24:7L.2602:IFBC;1-#
Price: 0733-8724/$20.00
Published by: IEEE, USA

DT Journal

TC Practical

CY United States

LA English

AB The principle of the transversal interleave filter previously proposed as a novel class of interleave filter is described. The principle of a conventional 1 .times. 1 coherent optical transversal filter is reviewed. Then, the fundamental operating principle and the three design conditions required for the novel interleave filter are explained. As examples, three types of filter design, namely 1) a general/transposed design; 2) an asymmetric design; and 3) a symmetric design, are presented, and their interleave filter characteristics are discussed. The designed interleave filters with a free spectral range of 100 GHz was fabricated using silica-based planar lightwave circuit (PLC) technology. The asymmetric design achieved a wide 3-dB passband width of 55 GHz, whereas an ordinary lattice-form interleave filter could not realize a 3-dB passband width larger than 50 GHz because of the halfband property. A small polarization-dependent wavelength shift of 0.01 nm is demonstrated by inserting a single half waveplate in the middle of the circuit. The general/transposed and symmetric designs realized a practical interleave filter with a boxlike transmission spectrum and low chromatic dispersion. The two-stage interleave filter formed by cascading the general and transposed designs has the advantages of a low crosstalk of less than -46 dB and a wide 20-dB stopband width of 40 GHz, whereas the single-stage symmetric design has an extremely small chromatic dispersion of within .+-.5 ***ps*** /nm. In addition, the design concept to realize a 1.times.N transversal interleave filter is extended

CC A4280C Spectral and other filters; A4280S Optical communication devices; A4282 Integrated optics; A4280L Optical waveguides and couplers; A4215E Optical system design; B4190F Optical coatings and filters; B6260C Optical communication equipment; B6260M Multiplexing and switching in optical communication; B4140 Integrated optics; B4130 Optical waveguides

CT light coherence; light polarisation; optical communication equipment; optical crosstalk; optical design techniques; optical dispersion; optical fibre communication; optical planar ***waveguides*** ; optical ***waveguide*** filters; silicon compounds; spectral line shift; wavelength division multiplexing

ST interleave filter; coherent filter; optical filter; transversal filter; general filter design; transposed filter design; symmetric filter design; free spectral range; silica-based planar lightwave circuit; lattice-form filter; boxlike transmission spectrum; chromatic dispersion; two-stage filter; optical crosstalk; wavelength-division multiplexing; optical waveguide filters; optical planar waveguides; SiO2

CHI SiO2 bin, O2 bin, Si bin, O bin

ET O; Si; B; N

L6 ANSWER 11 OF 16 INSPEC (C) 2006 IET on STN

AN 2006:8812365 INSPEC <<LOGINID::20060804>>

TI ***Waveguide*** electro-optic modulator in fused silica fabricated by ***femtosecond*** laser direct writing and thermal poling

AU Guangyu Li; Winick, K.A.; (Dept. of Electr. Eng. & Comput. Sci., Univ. of Michigan Beal Avenue, Ann Arbor, MI, USA), ***Said, A.A.*** ; ***Dugan, M.*** ; Bado, P.

SO Optics Letters (15 March 2006), vol.31, no.6, p. 739-41, 13 refs.
CODEN: OPLEDP, ISSN: 0146-9592
SICI: 0146-9592(20060315)31:6L.739:WEOM;1-V
Price: 0146-9592/06/060739-3/$15.00
Doc.No.: S0146-9592(16)00806-3
Published by: Opt. Soc. America, USA

DT Journal

TC Experimental

CY United States

LA English

AB An integrated electro-optic ***waveguide*** modulator is demonstrated

in bulk fused silica. A Mach-Zehnder interferometer ***waveguide*** structure is fabricated by direct writing with a ***femtosecond*** laser followed by thermal poling. A 20.degree. electro-optic phase shift is achieved at an operating wavelength of 1.55 .mu.m with an applied voltage of 400 V and an interaction length of 25.6 mm, which correspond to an estimated effective electro-optic coefficient of 0.17 pm/V for the TE-polarized mode

CC A4282 Integrated optics; A4280L Optical waveguides and couplers; A4280K Optical beam modulators; A4285D Optical fabrication, surface grinding; A4280W Ultrafast optical techniques; A0760L Optical interferometry; B4140 Integrated optics; B4130 Optical waveguides; B4150 Electro-optical devices

CT electro-optical modulation; high-speed optical techniques; integrated optics; light polarisation; Mach-Zehnder interferometers; optical fabrication; optical ***waveguides*** ; silicon compounds

ST waveguide electrooptic modulator; fused silica; femtosecond laser; direct writing; thermal poling; integrated waveguide modulator; Mach-Zehnder interferometer waveguide; electrooptic phase shift; electrooptic coefficient; TE-polarized mode; 1.55 mum; 400 V; SiO2

CHI SiO2 bin, O2 bin, Si bin, O bin

PHP wavelength 1.55E-06 m; voltage 4.0E+02 V

ET O; Si

L6 ANSWER 12 OF 16 INSPEC (C) 2006 IET on STN

AN 2005:8303852 INSPEC DN A2005-07-4262A-088; B2005-04-4360B-080 <<LOGINID::20060804>>

TI Fabrication and characterization of photonic devices directly written in glass using ***femtosecond*** lasers

AU Winick, K.A.; (Dept. of Electr. Eng. & Comput. Sci., Michigan Univ., Ann Arbor, MI, USA), Florea, C.; ***Said, A.A.*** ; ***Dugan, M.*** ; Bado, P.

SO Conference on Lasers and Electro-Optics (CLEO), vol.1, 2004, p. 2 pp. vol.1 of 2 vol. (3500) pp., 9 refs.
Editor(s): Sawchuk, A.A.
Published by: IEEE, Piscataway, NJ, USA
Conference: Conference on Lasers and Electro-Optics (CLEO), San Francisco, CA, USA, 16-21 May 2004
Sponsor(s): APS; IEEE; Opt. Soc. of America

DT Conference; Conference Article

TC Experimental

CY United States

LA English

AB Techniques for using ***femtosecond*** lasers to directly write ***waveguides*** and integrated optical components in glass are reviewed along with the history of this field and its current state

CC A4262A Laser materials processing; A4285D Optical fabrication, surface grinding; A4280L Optical waveguides and couplers; A4282 Integrated optics; A4280W Ultrafast optical techniques; B4360B Laser materials processing; B4130 Optical waveguides; B4140 Integrated optics

CT high-speed optical techniques; integrated optics; laser materials processing; optical fabrication; optical glass; optical ***waveguides***

ST optical fabrication; optical characterization; photonic devices; glass; femtosecond lasers; directly-written-waveguides; integrated optical components; SiO2

CHI SiO2 bin, O2 bin, Si bin, O bin

ET O; Si

L6 ANSWER 13 OF 16 INSPEC (C) 2006 IET on STN

AN 2005:8295053 INSPEC DN A2005-07-4260F-017; B2005-04-4330B-010 <<LOGINID::20060804>>

TI Manufacturing by laser direct-write of three-dimensional devices containing optical and microfluidic networks

AU ***Said, A.A.*** ; ***Dugan, M.*** ; Bado, P.; (Translume Inc., Ann Arbor, MI, USA), Bellouard, Y.; Scott, A.; Mabesa, J.R. Jr.

SO Proceedings of the SPIE - The International Society for Optical Engineering (2004), vol.5339, no.1, p. 194-204, 12 refs.
CODEN: PSISDG, ISSN: 0277-786X
SICI: 0277-786X(2004)5339:1L.194:MLDW;1-C
Price: 0277-786X/04/$15.00
Published by: SPIE-Int. Soc. Opt. Eng, USA
Conference: Photon Processing in Microelectronics and Photonics III, San Jose, CA, USA, 26-29 Jan. 2004

DT Conference; Conference Article; Journal

TC Practical; Experimental
CY United States
LA English
AB The index of refraction of most glasses can be permanently changed by exposure to ***femtosecond*** laser pulses. This effect allows for the fabrication of various two-dimensional or three-dimensional light guiding structures. Passive and active optical devices have been manufactured using this ***femtosecond*** direct-write technique. A closely related technique has recently been demonstrated to manufacture three-dimensional microfluidic networks. We describe recent work at Translume and RPI in ***femtosecond*** direct write to produce devices which incorporate on a single glass chip optical network with microfluidic network
CC A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4280W Ultrafast optical techniques; A4283 Micro-optical devices and technology; A4270C Optical glass; A4285D Optical fabrication, surface grinding; A4280L Optical waveguides and couplers; A4262A Laser materials processing; A4225G Edge and boundary effects; optical reflection and refraction; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4145 Micro-optical devices and technology; B4110 Optical materials; B2575F Fabrication of micromechanical devices; B4130 Optical waveguides; B4360B Laser materials processing
CT high-speed optical techniques; laser beam machining; micro-optics; microfluidics; micromachining; optical fabrication; optical glass; optical ***waveguides*** ; refractive index; silicon compounds
ST laser direct-write; three-dimensional device; glass chip optical network; three-dimensional microfluidic network; refraction index; femtosecond laser pulse; three-dimensional light guiding structure; passive optical device; active optical device; femtosecond direct-write technique; Renssealer Polytechnic Institute; Translume Polytechnic Institute; micro-machining; fused silica; SiO2
CHI SiO2 bin, O2 bin, Si bin, O bin
ET O; Si

L6 ANSWER 14 OF 16 INSPEC (C) 2006 IET on STN
AN 2005:8283213 INSPEC DN A2005-07-4255V-001; B2005-03-4320-006 <<LOGINID::20060804>>
TI Progress on collisionally pumped optical-field-ionization soft X-ray lasers
AU Sebban, S.; Mocek, T.; Bettaibi, I.; (Lab. d'Optique Appliquee, ENSTA-Ecole Polytechnique, Palaiseau, France), Cros, B.; ***Maynard,*** *** G.*** ; Butler, A.; Gonzalves, A.J.; McKenna, C.M.; Spence, D.J.; Hooker, S.M.; Upcraft, L.M.; Breger, P.; Agostini, P.; le Pape, S.; Zeitoun, P.; Valentin, C.; Balcou, P.; Ros, D.; Kazamias, S.; Klisnick, A.; Jamelot, G.; Rus, B.; Wyart, J.F.
SO IEEE Journal of Selected Topics in Quantum Electronics (Nov.-Dec. 2004), vol.10, no.6, p. 1351-62, 35 refs.
CODEN: IJSQEN, ISSN: 1077-260X
SICI: 1077-260X(200411/12)10:6L.1351:PCPO;1-A
Price: 1077-260X/04/$20.00
Published by: IEEE, USA
DT Journal
TC Experimental
CY United States
LA English
AB We present the status of optical field ionization soft X-ray lasers. The amplifying medium is generated by focusing a high-energy circularly polarized 30- ***fs*** 10-Hz Ti: sapphire laser system in a gaseous medium. Using xenon or krypton, strong laser emission at 41.8 and 32.8 nm, respectively, has been observed. After presenting the basis of the physics, we present recent characterization of the sources as well as dramatic improvement of their performances using the ***waveguiding*** technique
CC A4255V High energy lasing processes (e.g. gamma and X-ray lasers); A5250J Plasma production and heating by laser beams; B4320 Lasers
CT high-speed optical techniques; krypton; optical focusing; photoionisation; plasma production by laser; X-ray lasers; xenon
ST collisionally pumped optical-field-ionization; soft X-ray lasers; focusing; strong laser emission; xenon; krypton; 30 fs; 10 Hz; 41.8 nm; 32.8 nm; Al2O3:Ti; Xe; Kr
CHI Al2O3:Ti ss, Al2O3 ss, Al2 ss, Al ss, O3 ss, Ti ss, O ss, Al2O3 bin, Al2 bin, Al bin, O3 bin, O bin, Ti el, Ti dop; Xe el; Kr el
PHP time 3.0E-14 s; frequency 1.0E+01 Hz; wavelength 4.18E-08 m; wavelength

3.28E-08 m
ET O*Ti; O3:Ti; Ti doping; doped materials; O; Ti; Al*O; Al2O; Al cp; cp; O cp; Al

L6 ANSWER 15 OF 16 INSPEC (C) 2006 IET on STN
AN 2000:6795773 INSPEC DN A2001-03-4280L-011; B2001-02-4130-011 <<LOGINID::20060804>>
TI Optical ***waveguide*** amplifier in Nd-doped glass written with near-IR ***femtosecond*** laser pulses
AU Florea, C.; (Appl. Phys. Program, Michigan Univ., Ann Arbor, MI, USA), Winick, K.A.; Sikorski, Y.; ***Said, A.*** ; Bado, P.
SO Conference on Lasers and Electro-Optics (CLEO 2000). Technical Digest. Postconference Edition. TOPS Vol.39 (IEEE Cat. No.00CH37088), 2000, p. 128-9 of 720 pp., 6 refs.
ISBN: 1 55752 634 6
Published by: Opt. Soc. America, Salem, MA, USA
Conference: Conference on Lasers and Electro-Optics (CLEO 2000). Technical Digest. Postconference Edition. TOPS Vol.39, San Francisco, CA, USA, 7-12 May 2000
Sponsor(s): IEEE/Lasers & Electro-Opt. Soc.; Opt. Soc. America; Quantum Electron. & Opt. Div. Eur. Phys. Soc.; Japanese Quantum Electron. Joint Group
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB We present an active ***waveguide*** device directly written using near-IR ***femtosecond*** laser pulses. The device is a ***waveguide*** amplifier in a Nd-doped silicate glass. The material used was a commercially available Nd-doped silicate glass rod. We measured the absorption coefficient of the glass (maximum value of 4.6 cm-1 at 896 nm) and from this we estimate the Nd doping level to be around 2.times.1020 ions/cm3. We also recorded the fluorescence spectrum when pumping the glass at 806 nm and the peak in the 1.06 .mu.m region was localized around 1062 nm
CC A4280L Optical waveguides and couplers; A4282 Integrated optics; A4285D Optical fabrication, surface grinding; A4280W Ultrafast optical techniques; A4262A Laser materials processing; A4255R Lasing action in other solids; B4130 Optical waveguides; B4140 Integrated optics; B4360B Laser materials processing; B4320G Solid lasers
CT high-speed optical techniques; laser materials processing; neodymium; optical fabrication; optical glass; optical planar ***waveguides*** ; ***waveguide*** lasers
ST optical waveguide amplifier; Nd-doped glass; near-IR femtosecond laser pulses; active waveguide device; silicate glass rod; absorption coefficient; doping level; fluorescence spectrum; near-field mode profile; 1.06 micron
CHI SiO2 ss, Nd ss, O2 ss, Si ss, O ss, Nd el, Nd dop
PHP wavelength 1.06E-06 m
ET O; Nd; Si

L6 ANSWER 16 OF 16 INSPEC (C) 2006 IET on STN
AN 2000:6516191 INSPEC DN A2000-07-4255R-015; B2000-04-4320G-021 <<LOGINID::20060804>>
TI Optical ***waveguide*** amplifier in Nd-doped glass written with near-IR ***femtosecond*** laser pulses
AU Sikorski, Y.; ***Said, A.A.*** ; Bado, P.; ***Maynard, R.*** ; (Clark-MXR Inc., Dexter, MI, USA), Florea, C.; Winick, K.A.
SO Electronics Letters (3 Feb. 2000), vol.36, no.3, p. 226-7, 7 refs.
CODEN: ELLEAK, ISSN: 0013-5194
SICI: 0013-5194(20000203)36:3L.226:OWAD;1-K
Price: 0013-5194/2000/$10.00
Published by: IEE, UK
DT Journal
TC Experimental
CY United Kingdom
LA English
AB A near-IR (775 nm) ***femtosecond*** laser has been used to directly write a 1 cm long optical ***waveguide*** in Nd-doped silicate glass. A gain of 1.5 dB/cm was obtained at a signal wavelength of 1054 nm for 346 mW of 514 nm pump power, in front of the input coupling objective
CC A4255R Lasing action in other solids; A4260H Laser beam characteristics and interactions; A4280L Optical waveguides and couplers; A4285D Optical fabrication, surface grinding; A4280W Ultrafast optical techniques;

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      A4270C Optical glass; B4320G Solid lasers; B4330 Laser beam interactions
      and properties; B4130 Optical waveguides; B4110 Optical materials
CT      high-speed optical techniques; laser beams; neodymium; optical
      fabrication; optical glass; solid lasers;   ***waveguide***   lasers
ST      optical waveguide amplifier; Nd-doped glass; near-IR femtosecond laser
      pulses; near-IR femtosecond laser; optical waveguide; Nd-doped silicate
      glass; gain; signal wavelength; pump power; input coupling objective; 775
      nm; 1054 nm; 346 mW; 514 nm; 150 fs; 250 Hz; 4 muJ; 350 mW
CHI     Nd ss, Nd el, Nd dop
PHP     wavelength 7.75E-07 m; wavelength 1.054E-06 m; power 3.46E-01 W;
      wavelength 5.14E-07 m; time 1.5E-13 s; frequency 2.5E+02 Hz; energy
      4.0E-06 J; power 3.5E-01 W
ET      Nd; B


=> d his

     (FILE 'HOME' ENTERED AT 22:26:27 ON 04 AUG 2006)

     FILE 'CAPLUS, INSPEC' ENTERED AT 22:26:38 ON 04 AUG 2006
L1              0 S DUGAN/AU
L2           1764 S DUGAN?/AU
L3           8944 S SAID?/AU
L4           2653 S MAYNARD?/AU
L5            154 S (L2 OR L3 OR L4) AND (FS OR FEMTOSECOND OR PICOSECOND OR PS
L6             16 S L5 AND WAVEGUID?

=> l5 and index
L5 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l5 and index
L7            20 L5 AND INDEX

=> l7 not l6
L7 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l7 not l6
L8            16 L7 NOT L6

=> dup rem l8
PROCESSING COMPLETED FOR L8
L9              9 DUP REM L8 (7 DUPLICATES REMOVED)

=> d al 1-19
'AL' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'

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              its structure diagram
HITSEQ ------ HIT RN, its text modification, its CA index name, its
              structure diagram, plus NTE and SEQ fields
FHITSTR ----- First HIT RN, its text modification, its CA index name, and
              its structure diagram
FHITSEQ ----- First HIT RN, its text modification, its CA index name, its
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ALL --------- BIB, AB, IND, RE
APPS -------- AI, PRAI
BIB --------- AN, plus Bibliographic Data and PI table (default)
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CBIB -------- AN, plus Compressed Bibliographic Data
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DMAX -------- MAX, delimited for post-processing
FAM --------- AN, PI and PRAI in table, plus Patent Family data
FBIB -------- AN, BIB, plus Patent FAM
IND --------- Indexing data
IPC --------- International Patent Classifications
MAX --------- ALL, plus Patent FAM, RE
PATS -------- PI, SO
SAM --------- CC, SX, TI, ST, IT
SCAN -------- CC, SX, TI, ST, IT (random display, no answer numbers;
              SCAN must be entered on the same line as the DISPLAY,
              e.g., D SCAN or DISPLAY SCAN)
STD --------- BIB, CLASS

IABS -------- ABS, indented with text labels
IALL -------- ALL, indented with text labels
IBIB -------- BIB, indented with text labels
IMAX -------- MAX, indented with text labels
ISTD -------- STD, indented with text labels
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OBIB -------- AN, plus Bibliographic Data (original)
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SBIB -------- BIB, no citations
SIBIB ------- IBIB, no citations

HIT --------- Fields containing hit terms
HITIND ------ IC, ICA, ICI, NCL, CC and index field (ST and IT)
              containing hit terms
HITRN ------- HIT RN and its text modification
HITSTR ------ HIT RN, its text modification, its CA index name, and
              its structure diagram
HITSEQ ------ HIT RN, its text modification, its CA index name, its
              structure diagram, plus NTE and SEQ fields
FHITSTR ----- First HIT RN, its text modification, its CA index name, and
              its structure diagram
FHITSEQ ----- First HIT RN, its text modification, its CA index name, its
              structure diagram, plus NTE and SEQ fields
KWIC -------- Hit term plus 20 words on either side
OCC --------- Number of occurrence of hit term and field in which it occurs

To display a particular field or fields, enter the display field
codes.  For a list of the display field codes, enter HELP DFIELDS at
an arrow prompt (=>).  Examples of formats include: TI; TI,AU; BIB,ST;
TI,IND; TI,SO.  You may specify the format fields in any order and the
information will be displayed in the same order as the format
specification.

All of the formats (except for SAM, SCAN, HIT, HITIND, HITRN, HITSTR,
FHITSTR, HITSEQ, FHITSEQ, KWIC, and OCC) may be used with DISPLAY ACC
to view a specified Accession Number.
ENTER DISPLAY FORMAT (BIB):cit
'CIT' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'

The following are valid formats:

ABS --------- GI and AB
ALL --------- BIB, AB, IND, RE
APPS -------- AI, PRAI
BIB --------- AN, plus Bibliographic Data and PI table (default)
CAN --------- List of CA abstract numbers without answer numbers
CBIB -------- AN, plus Compressed Bibliographic Data
CLASS ------- IPC, NCL, ECLA, FTERM
DALL -------- ALL, delimited (end of each field identified)
DMAX -------- MAX, delimited for post-processing
FAM --------- AN, PI and PRAI in table, plus Patent Family data
FBIB -------- AN, BIB, plus Patent FAM
IND --------- Indexing data
IPC --------- International Patent Classifications
MAX --------- ALL, plus Patent FAM, RE
PATS -------- PI, SO
SAM --------- CC, SX, TI, ST, IT
SCAN -------- CC, SX, TI, ST, IT (random display, no answer numbers;
              SCAN must be entered on the same line as the DISPLAY,
              e.g., D SCAN or DISPLAY SCAN)
STD --------- BIB, CLASS

IABS -------- ABS, indented with text labels
IALL -------- ALL, indented with text labels
IBIB -------- BIB, indented with text labels
IMAX -------- MAX, indented with text labels
ISTD -------- STD, indented with text labels

OBIB -------- AN, plus Bibliographic Data (original)
OIBIB ------- OBIB, indented with text labels

SBIB -------- BIB, no citations
SIBIB ------- IBIB, no citations

HIT --------- Fields containing hit terms
HITIND ------ IC, ICA, ICI, NCL, CC and index field (ST and IT)
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```
               containing hit terms
HITRN ------- HIT RN and its text modification
HITSTR ------ HIT RN, its text modification, its CA index name, and
              its structure diagram
HITSEQ ------ HIT RN, its text modification, its CA index name, its
              structure diagram, plus NTE and SEQ fields
FHITSTR ----- First HIT RN, its text modification, its CA index name, and
              its structure diagram
FHITSEQ ----- First HIT RN, its text modification, its CA index name, its
              structure diagram, plus NTE and SEQ fields
KWIC -------- Hit term plus 20 words on either side
OCC --------- Number of occurrence of hit term and field in which it occurs

To display a particular field or fields, enter the display field
codes.  For a list of the display field codes, enter HELP DFIELDS at
an arrow prompt (=>).  Examples of formats include: TI; TI,AU; BIB,ST;
TI,IND; TI,SO.  You may specify the format fields in any order and the
information will be displayed in the same order as the format
specification.

All of the formats (except for SAM, SCAN, HIT, HITIND, HITRN, HITSTR,
FHITSTR, HITSEQ, FHITSEQ, KWIC, and OCC) may be used with DISPLAY ACC
to view a specified Accession Number.
ENTER DISPLAY FORMAT (BIB):bib

L9   ANSWER 1 OF 9  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:293749  CAPLUS <<LOGINID::20060804>>
TI   Investigation of   ***femtosecond***   laser irradiation on fused silica
AU   Bellouard, Yves; Colomb, Tristan; Depeursinge, Christian;   ***Said, Ali***
  ***     A.***  ;   ***Dugan, Mark***  ; Bado, Philippe
CS   Micro/Nano Scale Engineering, Dept. of Mechanical Engineering, Technische
     Univ. Eindhoven, Eindhoven, Neth.
SO   Proceedings of SPIE-The International Society for Optical Engineering
     (2006), 6108(Commercial and Biomedical Applications of Ultrafast Lasers
     VI), 61080M/1-61080M/9
     CODEN: PSISDG; ISSN: 0277-786X
PB   SPIE-The International Society for Optical Engineering
DT   Journal
LA   English
RE.CNT  16     THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9   ANSWER 2 OF 9  CAPLUS  COPYRIGHT 2006 ACS on STN  DUPLICATE 1
AN   2005:524593  CAPLUS <<LOGINID::20060804>>
DN   143:202366
TI   Investigation of   ***femtosecond***   laser irradiation on fused silica
     etching selectivity
AU   Bellouard, Yves;   ***Said, Ali A.***  ;   ***Dugan, Mark***  ; Bado,
     Philippe
CS   Rensselaer Polytechnic Institute, CAT/CIE, Troy, NY, 12180-3590, USA
SO   Materials Research Society Symposium Proceedings (2005), 850(Ultrafast
     Lasers for Materials Science), 155-160
     CODEN: MRSPDH; ISSN: 0272-9172
PB   Materials Research Society
DT   Journal
LA   English
RE.CNT  13     THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9   ANSWER 3 OF 9  CAPLUS  COPYRIGHT 2006 ACS on STN  DUPLICATE 2
AN   1996:703901  CAPLUS <<LOGINID::20060804>>
DN   126:66980
TI   Two-beam coupling in liquids via stimulated Rayleigh Wing Scattering
AU   Dogariu, Arthur; Xia, Tiejun; Hagan, David J.;   ***Said, Ali A.***  ; Van
     Stryland, Eric W.
CS   CREOL, University Central Florida, Orlando, FL, 32816-2700, USA
SO   Proceedings of SPIE-The International Society for Optical Engineering
     (1996), 2853(Nonlinear Optical Liquids), 116-125
     CODEN: PSISDG; ISSN: 0277-786X
PB   SPIE-The International Society for Optical Engineering
DT   Journal
LA   English
```

L9 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
AN 1992:203839 CAPLUS <<LOGINID::20060804>>
DN 116:203839
TI Determination of bound-electronic and free-carrier nonlinearities in zinc selenide, gallium arsenide, cadmium telluride, and zinc telluride
AU ***Said, A. A.*** ; Sheik-Bahae, M.; Hagan, D. J.; Wei, T. H.; Wang, J.; Young, J.; Van Stryland, E. W.
CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32816, USA
SO Journal of the Optical Society of America B: Optical Physics (1992), 9(3), 405-14
CODEN: JOBPDE; ISSN: 0740-3224
DT Journal
LA English

L9 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4
AN 1991:593536 CAPLUS <<LOGINID::20060804>>
DN 115:193536
TI Nonlinear refraction and optical limiting in thick media
AU Sheik-Bahae, Mansoor; ***Said, Ali A.*** ; Hagan, D. J.; Soileau, M. J.; Van Stryland, Eric W.
CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32816, USA
SO Optical Engineering (Bellingham, WA, United States) (1991), 30(8), 1228-35
CODEN: OPEGAR; ISSN: 0091-3286
DT Journal
LA English

L9 ANSWER 6 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5
AN 1990:505919 CAPLUS <<LOGINID::20060804>>
DN 113:105919
TI Sensitive measurement of optical nonlinearities using a single beam
AU Sheik-Bahae, Mansoor; ***Said, Ali A.*** ; Wei, Tai Huei; Hagan, David J.; Van Stryland, E. W.
CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32826, USA
SO IEEE Journal of Quantum Electronics (1990), 26(4), 760-9
CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English

L9 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6
AN 1991:111318 CAPLUS <<LOGINID::20060804>>
DN 114:111318
TI Nonlinearities in semiconductors for optical limiting
AU ***Said, A. A.*** ; Sheik-Bahae, M.; Hagan, D. J.; Canto-Said, E. J.; Wu, Y. Y.; Young, J.; Wei, T. H.; Van Stryland, E. W.
CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32816, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1990), 1307(Electro-Opt. Mater. Switches, Coat., Sens. Opt. Detect.), 294-301
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English

L9 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:195686 CAPLUS <<LOGINID::20060804>>
DN 114:195686
TI Sensitive n2 measurements using a single beam
AU Sheik-Bahae, M.; ***Said, A. A.*** ; Wei, T. H.; Hagan, D. J.; Van Stryland, E. W.; Soileau, M. J.
CS Cent. Res. Electro Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32826, USA
SO NIST Special Publication (1990), 801(Laser Induced Damage Opt. Mater.: 1989), 126-35
CODEN: NSPUE2; ISSN: 1048-776X
DT Journal
LA English

L9 ANSWER 9 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7

AN 1990:128674 CAPLUS <<LOGINID::20060804>>
DN 112:128674
TI Z-scan: a simple and sensitive technique for nonlinear refraction measurements
AU Sheik-bahae, M.; ***Said, A. A.*** ; Wei, T. H.; Wu, Y. Y.; Hagan, D. J.; Soileau, M. J.; Van Stryland, E. W.
CS CREOL, Univ. Cent. Florida, Orlando, FL, 32826, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1990), 1148(Nonlinear Opt. Prop. Mater.), 41-51
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English

=> d all 1-9

L9 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:293749 CAPLUS <<LOGINID::20060804>>
ED Entered STN: 30 Mar 2006
TI Investigation of ***femtosecond*** laser irradiation on fused silica
AU Bellouard, Yves; Colomb, Tristan; Depeursinge, Christian; ***Said, Ali*** *** A.*** ; ***Dugan, Mark*** ; Bado, Philippe
CS Micro/Nano Scale Engineering, Dept. of Mechanical Engineering, Technische Univ. Eindhoven, Eindhoven, Neth.
SO Proceedings of SPIE-The International Society for Optical Engineering (2006), 6108(Commercial and Biomedical Applications of Ultrafast Lasers VI), 61080M/1-61080M/9
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Femtosecond*** laser irradn. has various noticeable effects on fused silica. It can locally increase the ***index*** of refraction and modify the material chem. selectivity. Regions that have been exposed to the laser are etched hundred fold faster than unexposed regions. These effects are of practical importance from an application point-of-view and open new opportunities for the development of integrated photonics devices that combine structural and optical functions. Various observations reported in the literature indicate that those effects are potentially related to a combination of both structural changes and the presence of internal stress. In this paper, we present further investigations on the effect of ***femtosecond*** laser irradn. on fused silica substrate (a-SiO2). In particular, we use nanoindentation and holog.-based birefringence measurements, coupled with direct SEM observations on chem. etched specimens to characterize the effect of various laser parameters such as power, scanning speed and irradn. pattern. We show evidence of an interface between two different etching regimes that may be related to the presence of two different material phases induced by the laser irradn.
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Awazu, K; J Appl Physics 2003, V94, P6243 CAPLUS
(2) Awazu, K; J Non Cryst Solids 2004, V337, P241 CAPLUS
(3) Bardwaj, V; Optics Letters 2004, V29, P1312
(4) Bardwaj, V; Optics Letters 2004, V29, P1312
(5) Bellouard, Y; MRS Proceeding 2004, V850, PMM5.1.1
(6) Bellouard, Y; Opt Express 2005, V13, P6635
(7) Bellouard, Y; Optics Express 2004, V12, P2120 CAPLUS
(8) Colomb, T; Appl Opt 2005, V44, P4461
(9) Colomb, T; PhD Dissertation, no 3455, Ecole Polytechnique Federale de Lausanne (EPFL) 2006
(10) Davis, K; Optics Letters 1996, V21, P1729 CAPLUS
(11) Fiori, C; Phys Rev B 1986, V33, P2972 CAPLUS
(12) Galeener, F; Solid State Commun 1982, V44, P1037 CAPLUS
(13) Ikuta, Y; Appl Opt 2004, V43, P2332 CAPLUS
(14) Marcinkevicius, A; Optics Letters 2001, V26, P277 CAPLUS
(15) Oliver, W; J Mater Res 2004, V19, P3 CAPLUS
(16) Zhang, X; Appl Phys A 2004, V79, P945 CAPLUS

L9 ANSWER 2 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
AN 2005:524593 CAPLUS <<LOGINID::20060804>>

DN 143:202366
ED Entered STN: 17 Jun 2005
TI Investigation of ***femtosecond*** laser irradiation on fused silica
etching selectivity
AU Bellouard, Yves; ***Said, Ali A.*** ; ***Dugan, Mark*** ; Bado,
Philippe
CS Rensselaer Polytechnic Institute, CAT/CIE, Troy, NY, 12180-3590, USA
SO Materials Research Society Symposium Proceedings (2005), 850(Ultrafast
Lasers for Materials Science), 155-160
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 74

AB ***Femtosecond*** laser irradn. has various noticeable effects on
fused SiO2. It can locally increase the ***index*** of refraction or
modify the material chem. selectivity. Regions that were exposed to the
laser are etched several times faster than unexposed regions. Various
observations reported in the literature seem to show that these effects
are possibly related to a combination of structural changes and the
presence of internal stress. A detailed anal. of the contribution of both
effects is still lacking. Systematic SEM-based studies performed on fused
SiO2 (a-SiO2) are presented. Line-patterns were 1st scanned on the
substrate using a ***fs*** laser and then etched in a low-concn. HF
soln. The effects of various laser parameters like power and scanning
speed are analyzed, and further evidence is shown of an interface between
2 different etching regimes.

ST vitreous silica etching selectivity ***femtosecond*** laser irradn

IT Interface
(***femtosecond*** laser irradn. on fused silica etching
selectivity in relation to)

IT Scanning electron microscopy
(of ***femtosecond*** laser irradn. on fused silica etching
selectivity)

IT Etching
(photochem., laser-controlled; ***femtosecond*** on fused silica
selectivity)

IT 60676-86-0
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)
(***femtosecond*** laser irradn. on etching selectivity of)

IT 7664-39-3, Hydrogen fluoride, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(***femtosecond*** laser irradn. on fused silica etching
selectivity using)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Agarwal, A; J Non Cryst Solids 1997, V209, P166 CAPLUS
(2) Awazu, K; J Appl Physics 2003, V94, P6243 CAPLUS
(3) Awazu, K; J Non Cryst Solids 2004, V337, P241 CAPLUS
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(5) Bardwaj, V; Optics Letters 2004, V29, P1312
(6) Bellouard, Y; Optics Express 2004, V12, P2120 CAPLUS
(7) Davis, K; Optics Letters 1996, V21, P1729 CAPLUS
(8) Fiori, C; Phys Rev B 1986, V33, P2972 CAPLUS
(9) Galeener, F; Solid State Commun 1982, V44, P1037 CAPLUS
(10) Ikuta, Y; Appl Opt 2004, V43, P2332 CAPLUS
(11) Kondo, Y; Jpn J Appl Phys 1998, V37, PL94 CAPLUS
(12) Marcinkevicius, A; Optics Letters 2001, V26, P277 CAPLUS
(13) Zhang, X; Appl Phys A 2004, V79, P945 CAPLUS

L9 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
AN 1996:703901 CAPLUS <<LOGINID::20060804>>
DN 126:66980
ED Entered STN: 27 Nov 1996
TI Two-beam coupling in liquids via stimulated Rayleigh Wing Scattering
AU Dogariu, Arthur; Xia, Tiejun; Hagan, David J.; ***Said, Ali A.*** ; Van
Stryland, Eric W.
CS CREOL, University Central Florida, Orlando, FL, 32816-2700, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (1996), 2853(Nonlinear Optical Liquids), 116-125
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Transient energy transfer or two-beam coupling is demonstrated in CS2 and other transparent Kerr liqs. using frequency chirped, 17 ***ps*** (HW1/eM) 532 nm pulses with several polarization combinations. As the temporal delay between pulses in a std. pump-probe geometry is varied within the coherence time. The 1st pulse always loses energy while the 2nd pulse gains this energy. Scattering from phase gratings can lead to coherent energy coupling only if the nonlinearity has a finite relaxation time. This two-beam coupling in Kerr media such as CS2 is assocd. with Stimulated Rayleigh-Wing Scattering (SRWS). The frequency difference needed for beam coupling can be achieved with chirped pulses or with short pulses in nonlinear materials if irradiance dependent phase shifts are being developed during the laser pulse due to self and cross-phase modulation. Here the authors consider the interaction between linearly chirped pulses obtained from the authors' Q-switched Nd:YAG laser. This leads to an energy transfer linearly proportional to irradiance so that the signal can be obsd. at irradiances lower than those needed for induced phased modulation. The measurements were performed on CS2 but the results are valid for any Kerr liq. that has a nonlinear ***index*** of refraction with a relaxation time on the order of the laser pulse width. The interaction follows the polarization dependence of SRWS. The only parameters needed for the theor. fittings are the nonlinear ***index*** n2, its relaxation time and the linear chirp of the laser pulse. The 1st two are known for CS2 and the laser chirp is independently measured using 1st and 2nd order autocorrelations.
ST two beam coupling liq Kerr; stimulated Rayleigh wing scattering coupling; carbon sulfide laser radiation coupling
IT Liquids
(Kerr; two-beam coupling with energy transfer in Kerr liqs. via stimulated Rayleigh Wing scattering)
IT Nonlinear optical properties
(beam coupling; two-beam coupling with energy transfer in Kerr liqs. via stimulated Rayleigh Wing scattering)
IT Electromagnetic wave
Energy transfer
Laser radiation
(two-beam coupling with energy transfer in Kerr liqs. via stimulated Rayleigh Wing scattering)
IT 75-15-0, Carbon disulfide, properties
RL: PRP (Properties)
(two-beam coupling with energy transfer in Kerr liqs. via stimulated Rayleigh Wing scattering)

L9 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
AN 1992:203839 CAPLUS <<LOGINID::20060804>>
DN 116:203839
ED Entered STN: 16 May 1992
TI Determination of bound-electronic and free-carrier nonlinearities in zinc selenide, gallium arsenide, cadmium telluride, and zinc telluride
AU ***Said, A. A.*** ; Sheik-Bahae, M.; Hagan, D. J.; Wei, T. H.; Wang, J.; Young, J.; Van Stryland, E. W.
CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32816, USA
SO Journal of the Optical Society of America B: Optical Physics (1992), 9(3), 405-14
CODEN: JOBPDE; ISSN: 0740-3224
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB The application of the Z-scan exptl. technique is extended to det. free-carrier nonlinearities in the presence of bound electronic refraction and two-photon absorption. This method is employed using ***picosecond*** pulses in CdTe, GaAs, and ZnTe at 1.06 .mu.m and in

ZnSe at 1.06 and 0.53 .mu.m, to measure the refractive- ***index*** change induced by two-photon-excited free carriers (coeff. .sigma.r), the two-photon absorption coeff., .beta., and the bound electronic nonlinear refractive ***index*** n2. The real and imaginary parts of the third-order susceptibility (i.e., n2 and .beta., resp.) are detd. by Z scans with low inputs, and the refraction from carriers generated by two-photon absorption (an effective fifth-order nonlinearity) is detd. from Z scans with higher input energies. The exptl. results are compared with theor. models and the three measured parameters are well predicted by simple two-band models. n2 Changes from pos. to neg. as the photon energy approaches the band edge, in accordance with a recent theory of the dispersion of n2 in solids based on Kramers-Kronig transformations. The values of .sigma.r are in agreement with simple band-filling models.

ST optical nonlinearity semiconductor; bound electronic nonlinearity semiconductor; free carrier nonlinearity semiconductor

IT Photon
(absorption of two, nonlinearities in semiconductors in presence of)

IT Semiconductor materials
(bound-electronic and free-carrier nonlinearities in)

IT Optical nonlinear property
(bound-electronic and free-carrier, in semiconductors)

IT Refractive ***index*** and Optical refraction
(nonlinear, in semiconductors)

IT Optical nonlinear property
(refraction, in semiconductors)

IT Optical absorption
(two-photon, nonlinearities in semiconductors in presence of)

IT 1303-00-0, Gallium arsenide, properties 1306-25-8, Cadmium telluride, properties 1315-09-9, Zinc selenide 1315-11-3, Zinc telluride
RL: PRP (Properties)
(optical nonlinearities in, bound-electronic and free-carrier)

L9 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4

AN 1991:593536 CAPLUS <<LOGINID::20060804>>

DN 115:193536

ED Entered STN: 01 Nov 1991

TI Nonlinear refraction and optical limiting in thick media

AU Sheik-Bahae, Mansoor; ***Said, Ali A.*** ; Hagan, D. J.; Soileau, M. J.; Van Stryland, Eric W.

CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32816, USA

SO Optical Engineering (Bellingham, WA, United States) (1991), 30(8), 1228-35
CODEN: OPEGAR; ISSN: 0091-3286

DT Journal

LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Optical beam propagation was examd. in nonlinear refractive materials having a thickness greater than the depth of focus of the input beam (i.e., internal self-action). A simple model based on the const. shape approxn. is adequate for analyzing the propagation of laser beams within such media under most conditions. In a tight focus geometry, the position of the sample with respect to the focal plane, z, is an important parameter in the fluence limiting characteristics of the output. The behavior with z allows performing a thick sample Z-scan from which the sign and magnitude of the nonlinear refraction ***index*** can be detd. In CS2, this method was used to independently measure the neg. thermally induced ***index*** change and the pos. Kerr nonlinearity with nanosecond and ***picosecond*** CO2 laser pulses, resp. The limiting characteristics were examd. of thick CS2 samples that qual. agree with the anal. for both pos. and neg. nonlinear refraction. This anal. is useful in optimizing the limiting behavior of devices based on self-action.

ST nonlinear refractive ***index*** optical limiting; thick media optical limiting

IT Optical nonlinear property
(of refractive materials, optical limiting in relation to)

IT Laser radiation
Light
(propagation of, in nonlinear refractive materials)

IT Refractive ***index*** and Optical refraction
(nonlinear, of thick media)

IT   Optical nonlinear property
        (refraction, of thick media)
IT   75-15-0, Carbon disulfide, properties
     RL: PRP (Properties)
        (nonlinear refraction and optical limiting in thick media of)

L9   ANSWER 6 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5
AN   1990:505919 CAPLUS <<LOGINID::20060804>>
DN   113:105919
ED   Entered STN: 16 Sep 1990
TI   Sensitive measurement of optical nonlinearities using a single beam
AU   Sheik-Bahae, Mansoor;   ***Said, Ali A.*** ; Wei, Tai Huei; Hagan, David
     J.; Van Stryland, E. W.
CS   Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32826,
     USA
SO   IEEE Journal of Quantum Electronics (1990), 26(4), 760-9
     CODEN: IEJQA7; ISSN: 0018-9197
DT   Journal
LA   English
CC   73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
AB   A sensitive single-beam technique is reported for measuring both the
     nonlinear refractive   ***index***   and nonlinear absorption coeff. for a
     wide variety of materials. The exptl. details are described and a
     comprehensive theor. anal. is presented including cases where nonlinear
     refraction is accompanied by nonlinear absorption. In these expts., the
     transmittance of a sample is measured through a finite aperture in the far
     field as the sample is moved along the propagation path (z) of a focused
     Gaussian beam. The sign and magnitude of the nonlinear refraction are
     easily deduced from such a transmittance curve (Z-scan). Employing this
     technique, a sensitivity of better than .lambda./300 wavefront distortion
     is achieved in n2 measurements of BaF2 using   ***picosecond***
     frequency-doubled Nd:YAG laser pulses. In cases where nonlinear
     refraction is accompanied by nonlinear absorption, it is possible to sep.
     evaluate the nonlinear refraction as well as the nonlinear absorption by
     performing a second Z scan with the aperture removed. This method is
     demonstrated for ZnSe at 532 nm where 2-photon absorption is present and
     n2 is neg.
ST   optical nonlinearity detn single beam
IT   Optical nonlinear property
        (detn. of, using single beam)
IT   Optical nonlinear property
        (absorption, detn. using single beam)
IT   Optical absorption
     Refractive   ***index***   and Optical refraction
        (nonlinear, detn. using single beam)
IT   Optical nonlinear property
        (refraction, detn. using single beam)
IT   75-15-0, Carbon disulfide, properties   1315-09-9, Zinc selenide (ZnSe)
     7787-32-8, Barium fluoride
     RL: PRP (Properties)
        (optical nonlinearities of, detn. using single beam)

L9   ANSWER 7 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6
AN   1991:111318 CAPLUS <<LOGINID::20060804>>
DN   114:111318
ED   Entered STN: 23 Mar 1991
TI   Nonlinearities in semiconductors for optical limiting
AU   ***Said, A. A.*** ; Sheik-Bahae, M.; Hagan, D. J.; Canto-Said, E. J.;
     Wu, Y. Y.; Young, J.; Wei, T. H.; Van Stryland, E. W.
CS   Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32816,
     USA
SO   Proceedings of SPIE-The International Society for Optical Engineering
     (1990), 1307(Electro-Opt. Mater. Switches, Coat., Sens. Opt. Detect.),
     294-301
     CODEN: PSISDG; ISSN: 0277-786X
DT   Journal
LA   English
CC   73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
AB   Measurements are given of nonlinear absorption and refraction in
     semiconductors used in the realization of optical limiters. Nonlinear

refraction at 532 nm in ZnSe is caused by a neg. 3rd order electronic Kerr effect in addn. to the 2-photon-absorption (2PA) induced carrier refraction. Time-resolved beam distortion, ***picosecond*** time-resolved degenerate 4-wave mixing and recently developed Z-scan technique were used to det. the sign and magnitude of the 2PA coeff., the bound electronic nonlinearity, n2 and the refractive ***index*** change per free carrier.
ST nonlinear optical property semiconductor limiter; zinc selenide nonlinear optical
IT Laser radiation
(absorption of two photons of, by zinc selenide)
IT Photon
(absorption of two, by zinc selenide)
IT Optical instruments
(limiters, nonlinear optical properties of semiconductors for)
IT Semiconductor materials
(nonlinear optical properties of, for optical limiting)
IT Electric current carriers
(refractive ***index*** change per, in zinc selenide)
IT Optical nonlinear property
(absorption, of semiconductors for optical limiters)
IT Optical absorption
Refractive ***index*** and Optical refraction
(nonlinear, of semiconductors for optical limiters)
IT Optical nonlinear property
(refraction, of semiconductors for optical limiters)
IT 1315-09-9, Zinc selenide
RL: PRP (Properties)
(optical nonlinear properties of, for use as optical limiter)

L9 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:195686 CAPLUS <<LOGINID::20060804>>
DN 114:195686
ED Entered STN: 17 May 1991
TI Sensitive n2 measurements using a single beam
AU Sheik-Bahae, M.; ***Said, A. A.*** ; Wei, T. H.; Hagan, D. J.; Van Stryland, E. W.; Soileau, M. J.
CS Cent. Res. Electro Opt. Lasers, Univ. Cent. Florida, Orlando, FL, 32826, USA
SO NIST Special Publication (1990), 801(Laser Induced Damage Opt. Mater.: 1989), 126-35
CODEN: NSPUE2; ISSN: 1048-776X
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A sensitive single beam technique is given for measuring nonlinear refraction in a variety of materials that offers simplicity, sensitivity and speed. The transmittance of a sample is measured through a finite aperture in the far-field as the sample is moved along the propagation path (z) of a focused Gaussian beam. The sign and magnitude of the nonlinearity is easily deduced from such a transmittance curve (Z-scan). Employing this technique a sensitivity of better than .lambda./300 wavefront distortion is achieved in n2 measurements of BaF2 using ***picosecond*** visible laser pulses.
ST nonlinear refraction measurement
IT Laser radiation, chemical and physical effects
(in nonlinear refraction measurements)
IT Laser radiation
(nonlinear refraction of)
IT Refractive ***index*** and Optical refraction
(nonlinear, measurement of)
IT Optical nonlinear property
(refraction, measurement of)
IT 75-15-0, Carbon disulfide, properties 7787-32-8, Barium difluoride
RL: PRP (Properties)
(nonlinear refraction measurement of)

L9 ANSWER 9 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7
AN 1990:128674 CAPLUS <<LOGINID::20060804>>
DN 112:128674
ED Entered STN: 31 Mar 1990

```
TI   Z-scan:  a simple and sensitive technique for nonlinear refraction
     measurements
AU   Sheik-bahae, M.;    ***Said, A. A.***  ; Wei, T. H.; Wu, Y. Y.; Hagan, D.
     J.; Soileau, M. J.; Van Stryland, E. W.
CS   CREOL, Univ. Cent. Florida, Orlando, FL, 32826, USA
SO   Proceedings of SPIE-The International Society for Optical Engineering
     (1990), 1148(Nonlinear Opt. Prop. Mater.), 41-51
     CODEN: PSISDG; ISSN: 0277-786X
DT   Journal
LA   English
CC   73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
AB   A sensitive technique is described for measuring nonlinear refraction in a
     variety of materials that offers simplicity, sensitivity and speed.  The
     transmittance of a sample is measured though a finite aperture in the
     far-field as the sample is moved along the propagation path of a focused
     Gaussian beam.  The sign and magnitude of the nonlinearity is easily
     deduced from such a transmittance curve (Z-scan).  Employing this
     technique a sensitivity of better than .lambda./300 wavefront distortion
     is achieved in n2 measurements of BaF2 using    ***picosecond***
     frequency doubled Nd:YAG laser pulses.
ST   nonlinear refraction detn Z scan
IT   Refractive    ***index***    and Optical refraction
        (nonlinear, detn. by Z-scan technique)
IT   Optical nonlinear property
        (refraction, detn. by Z-scan technique)
IT   75-15-0, Carbon disulfide, properties   7787-32-8, Barium fluoride
     RL: PRP (Properties)
        (nonlinear refractive   ***index***   of, detn. by Z-scan technique)


=> d his

     (FILE 'HOME' ENTERED AT 22:26:27 ON 04 AUG 2006)

     FILE 'CAPLUS, INSPEC' ENTERED AT 22:26:38 ON 04 AUG 2006
L1            0 S DUGAN/AU
L2         1764 S DUGAN?/AU
L3         8944 S SAID?/AU
L4         2653 S MAYNARD?/AU
L5          154 S (L2 OR L3 OR L4) AND (FS OR FEMTOSECOND OR PICOSECOND OR PS
L6           16 S L5 AND WAVEGUID?
L7           20 S L5 AND INDEX
L8           16 S L7 NOT L6
L9            9 DUP REM L8 (7 DUPLICATES REMOVED)

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L1	8	("5656186" or "5761181" or "6104852" or "6628877").pn. or us-2001/0021293-$.did.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:24
L2	889	dugan.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:24
L3	3305	dugan	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:25
L4	13	(l3 or l2) and ((picosecond or femtosecond or ultrashort or "ultra-short" or (ultra adj2 short)) near laser)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:36
L5	140	(depolarized or polarized or polarization) same ((picosecond or femtosecond or ultrashort or "ultra-short" or (ultra adj2 short)) near laser)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:48
L6	250	(translat$6 or scan$6) same ((picosecond or femtosecond or ultrashort or "ultra-short" or (ultra adj2 short)) near laser)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:37
L7	1	(depolarized or polarized or polarization) and "6768850".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:48
L8	25	l5 and l6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:45
L9	8	l8 and @ad<"20020411"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:49

EAST Search History

L10	41566	((linear or plane) near5 (polarized or polarization))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:48
L11	24	l10 same ((picosecond or femtosecond or ultrashort or "ultra-short" or (ultra adj2 short)) near laser)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:48
L12	17	l11 and @ad<"20020411"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:49
L13	16	l12 not l9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/04 15:49

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 NEWS  7  MAY 19  Derwent World Patents Index to be reloaded and enhanced
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                  USPATFULL/USPAT2
 NEWS  9  MAY 30  The F-Term thesaurus is now available in CA/CAplus
 NEWS 10  JUN 02  The first reclassification of IPC codes now complete in
                  INPADOC
 NEWS 11  JUN 26  TULSA/TULSA2 reloaded and enhanced with new search and
                  and display fields
 NEWS 12  JUN 28  Price changes in full-text patent databases EPFULL and PCTFULL
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               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 26 JUNE 2006.

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FIELD CODE - 'AND' OPERATOR ASSUMED 'PAINTING)(P)(WAVEGUID?'
L1 853 (ELLIPTICAL OR OVAL OR OVOID OR ELLIPSE OR PAINTING)(P)(WAVEGUID
?)

=> s (fs or ps or picosecond or femtosecond) and l1
L2 17 (FS OR PS OR PICOSECOND OR FEMTOSECOND) AND L1

=> s (fs or ps or picosecond or femtosecond or ultrashort or (ultra(2w)short)) and l1
L3 18 (FS OR PS OR PICOSECOND OR FEMTOSECOND OR ULTRASHORT OR (ULTRA(2
W) SHORT)) AND L1

=> s (elliptical or oval or ovoid or ellipse or painting or trimming)(p)(waveguid?)
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'TRIMMING)(P)(WAVEGUID?'
L4 999 (ELLIPTICAL OR OVAL OR OVOID OR ELLIPSE OR PAINTING OR TRIMMING)
(P)(WAVEGUID?)

=> s (fs or ps or picosecond or femtosecond or ultrashort or (ultra(2w)short)) and l4
L5 33 (FS OR PS OR PICOSECOND OR FEMTOSECOND OR ULTRASHORT OR (ULTRA(2
W) SHORT)) AND L4

=> d all 1-33

L5 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:293631 CAPLUS <<LOGINID::20060804>>
ED Entered STN: 30 Mar 2006
TI Developments in laser processing for silica-based planar lightwave
circuits
AU Nasu, Y.; Abe, M.; Kohtoku, M.
CS NTT Photonics Labs., NTT Corporation, 3-1, Morinosato Wakamiya, Kanagawa,
243-0198, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering
(2006), 6107(Laser-Based Micropackaging), 61070B/1-61070B/9
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal; General Review
LA English
CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Laser processing offers an attractive way of manufg. both optical and
biomedical devices including microfluidic channels and biochips. Laser
processing is also promising for the fabrication and ***trimming*** of
silica-based planar lightwave circuits (PLCs). PLCs are key functional
components for use in optical telecommunication systems since they offer
compactness and high functionality in addn. to excellent stability. A
laser light that strongly interacts with glass, such as UV light or
femtosecond pulses, can increase the refractive index of glass.
This phenomenon can be used to improve the performance of PLCs as well as
to enhance their functionality. UV laser ***trimming*** is useful in
that it can be used to change the refractive index of fabricated
waveguides and thus compensate for fabrication errors.
Fabrication errors have various detrimental effects on PLC performance
including deviation from the designed wavelength, polarization dependence
and crosstalk degrdn. UV laser ***trimming*** can greatly improve PLC
performance by compensating for these errors. In addn., laser processing
can provide PLCs with new functionalities. For example, a UV laser can be
used to produce band-reflection mirrors in external cavity lasers in PLCs.
Direct ***waveguide*** writing is also an attractive way to enhance
circuit layout flexibility. Recently, a ***femtosecond*** laser was
found to be effective for writing 3-dimensional ***waveguides*** , and
it can also be used to interconnect ***waveguides*** flexibly. This
enables us to expand PLC geometry from two to three dimensions. This talk
will review trends in laser processing for PLC fabrication and recent R
and D topics.
ST silica planar lightwave circuit laser processing development review
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L5 ANSWER 2 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:559058 CAPLUS <<LOGINID::20060804>>
DN 143:202506
ED Entered STN: 28 Jun 2005
TI An elliptical Talbot interferometer for fiber Bragg grating fabrication
AU Pissadakis, Stavros; Reekie, Laurence
CS Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas, Heraklion, 71 110, Greece
SO Review of Scientific Instruments (2005), 76(6), 066101/1-066101/3
CODEN: RSINAK; ISSN: 0034-6748
PB American Institute of Physics
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A simple and easily aligned two-mirror interferometer for fabricating Bragg gratings in optical bulk materials, waveguides, and fibers is presented. The interferometer consists of a simple phase mask splitting element and two dielec. mirrors optimized for max. reflectance at an incident angle of 45 deg. By choosing a suitable optical configuration the half-period of the phase mask is patterned on the interference plane, while a wide range of periodicities can be inscribed by adjusting the relative angles between the interferometer folding mirrors. The operation of the interferometer is demonstrated for grating inscription in Ge-doped optical fibers, using 213 nm, 150 ***ps*** Nd:YAG radiation.
ST elliptical Talbot interferometer fiber Bragg grating fabrication
IT Diffraction gratings
(Bragg; elliptical Talbot interferometer for fiber Bragg grating fabrication)
IT Mirrors
(dielec.; elliptical Talbot interferometer for fiber Bragg grating fabrication)
IT Fiber optics
Interferometers
Laser radiation
Optical fibers
Optical materials
Optical ***waveguides***
(***elliptical*** Talbot interferometer for fiber Bragg grating fabrication)
IT Shadow masks
(phase; elliptical Talbot interferometer for fiber Bragg grating fabrication)
IT 7440-56-4, Germanium, properties
RL: CPS (Chemical process); DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(elliptical Talbot interferometer for fiber Bragg grating fabrication)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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AN 2004:910948 CAPLUS <<LOGINID::20060804>>
DN 143:105404
ED Entered STN: 01 Nov 2004
TI The influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses
AU Saliminia, A.; Nguyen, N. T.; Chin, S. L.; Vallee, R.
CS Center for Optics Photonics and Lasers, Universite Laval, Que., G1K 7P4, Can.
SO Optics Communications (2004), 241(4-6), 529-538
CODEN: OPCOB8; ISSN: 0030-4018
PB Elsevier B.V.
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The interaction of focused ***femtosecond*** IR laser pulses at 1 kHz repetition rate with bulk fused SiO2 is thoroughly studied. The interplay between self-focusing and filamentation of the laser pulses is analyzed for a broad range of focusing conditions. Even in the case of very tight focusing, filamentation is obsd. as evidenced by the scanning electron microscope (SEM) pictures. Preliminary results show that using such a tight focusing geometry and at input powers above the crit. power for self-focusing in SiO2, ***waveguide*** structures with ***elliptical*** cores are inscribed within the glass by moving the sample perpendicular to the laser beam propagation direction.
ST self focusing filamentation refractive index modification fused silica; laser radiation waveguide fused silica
IT Plasma
(fluorescence; influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses)
IT Laser radiation scattering
Optical waveguides
(influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses)
IT Refractive index
(modification of; influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses)
IT Fluorescence
(plasma; influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses)
IT Laser radiation
(pulsed, IR; influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses)
IT 60676-86-0, Vitreous silica
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses)
RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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AN 2004:214424 CAPLUS <<LOGINID::20060804>>
DN 141:372369
ED Entered STN: 18 Mar 2004
TI Nonlinear ellipse rotation of high energy ***femtosecond*** optical pulses for pulse contrast enhancement
AU Mohebbi, Mohammad
CS Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, T6G 2V4, Can.
SO Optical and Quantum Electronics (2004), 36(4), 383-387
CODEN: OQELDI; ISSN: 0306-8919
PB Kluwer Academic Publishers
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 65
AB An argon filled hollow fiber with metal coating on the inner glass surface has been used for nonlinear ***ellipse*** rotation of ***femtosecond*** optical pulses at 800 nm. Pulse contrast can be achieved using this ***waveguide*** with higher transmission compared with a fused silica ***waveguide*** .
ST nonlinear ellipse rotation highenergy ***femtosecond*** optical pulse contrast enhancement
IT Laser radiation
Optical fibers
(nonlinear ellipse rotation of high energy ***femtosecond*** optical pulses for pulse contrast enhancement)
IT 7440-22-4, Silver, properties 7440-37-1, Argon, properties
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(nonlinear ellipse rotation of high energy ***femtosecond*** optical pulses for pulse contrast enhancement)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L5 ANSWER 5 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:270615 CAPLUS <<LOGINID::20060804>>
DN 139:14655
ED Entered STN: 09 Apr 2003
TI Reliable refractive-index adjustment in Ge-doped silica-core planar
waveguides by high-repetition rate ***femtosecond*** laser pulses
AU Washio, Kunihiko; Kouta, Hikaru; Urino, Yutaka; Hirao, Kazuyuki
CS Control Systems Operations Unit, NEC Corporation, Tokyo, 108-8001, Japan
SO Laser Institute of America [Publication] (2002), 94(Congress Proceedings -
Laser Materials Processing Conference [and] Laser Microfabrication
Conference, 2002, Book 3), 1567-1575
CODEN: LIAAED
PB Laser Institute of America
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
AB Laser ***trimming*** of phase errors are becoming vitally important
technologies for SiO2-based planar ***waveguide*** devices such as
arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc.
for Dense Wavelength Division Multiplexing (DWDM). Conventional phase
trimming technologies based on UV excimer lasers have serious
problems such as delicate and time consuming prepn. for H-loaded
sensitization processes, requirement of mask-processes and difficulty in
real time, high-speed phase-error correction, etc. This paper presents
some representative features of novel technol. for rapid and reliable
refractive-index adjustment in germanosilica-based planar
waveguides using high-repetition rate ***ultrashort*** laser
pulses. IR (800nm), 200 kHz, 150 ***fs*** pulses were used to
increase refractive index of the planar ***waveguides*** with 100
.mu.m/s scanning speed. With increase in the irradn. power d., max.
refractive-index increase up to .apprx.2 .times. 10-3 was obtained with
distinct satn. at .apprx.2.2 TW/cm2. No decay in the refractive index
change was obsd. even after annealing at 200.degree. for 100 h. This
highly stable refractive-index increase is in consistent with the
phenomena of permanent refractive-index increase obsd. by Kondo, et al.
in-Ge-doped SiO2-core glass fibers irradiated by ***ultrashort***
laser pulses.
ST index germanium silica waveguide laser
IT Optical couplers
(directional; reliable refractive-index adjustment in Ge-doped
silica-core planar waveguides by high-repetition rate
femtosecond laser pulses)
IT Fluorescence
Radiative transition
(lifetime; reliable refractive-index adjustment in Ge-doped silica-core
planar waveguides by high-repetition rate ***femtosecond*** laser
pulses)
IT Coating materials
(masking; reliable refractive-index adjustment in Ge-doped silica-core
planar waveguides by high-repetition rate ***femtosecond*** laser
pulses)
IT Annealing
Excimer lasers
IR spectra
Optical waveguides
Planar waveguides (optical)
Refractive index
Solid state lasers
(reliable refractive-index adjustment in Ge-doped silica-core planar
waveguides by high-repetition rate ***femtosecond*** laser pulses)
IT Glass fibers, uses
RL: DEV (Device component use); USES (Uses)
(reliable refractive-index adjustment in Ge-doped silica-core planar

waveguides by high-repetition rate ***femtosecond*** laser pulses)
IT 7631-86-9, Silica, uses 12385-13-6, Hydrogen atom, uses
RL: DEV (Device component use); USES (Uses)
(reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(3) Baker, S; J Lightwave Technol 1997, V15, P1470 CAPLUS
(4) Borrelli, N; Opt Lett 1999, V24, P1401 CAPLUS
(5) Chen, K; IEEE Photonics Technol Lett 2002, V14, P71
(6) Davis, K; Opt Lett 1996, V21, P1729 CAPLUS
(7) Douay, M; J Lightwave Technol 1997, V15, P1329 CAPLUS
(8) Hanada, T; IECEC Trans Electron 1997, VE80-C, P130
(9) Kondo, Y; Opt Lett 1999, V24, P646 CAPLUS
(10) Maxwell, G; Electron Lett 1995, V31, P95 CAPLUS
(11) Minoshima, K; Opt Lett 2001, V26, P1516
(12) Miura, K; Nuclear Instruments and Methods in Physics Research B 1998, V141, P726 CAPLUS
(13) Nishii, J; Phys Rev B 1995, V52, P1661 CAPLUS
(14) Poulsen, C; Electron Lett 1995, V31, P1437
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(16) Schaffer, B; Opt Lett 2001, V26, P93
(17) Takada, K; Opt Lett 2001, V26, P64
(18) Zauner, A; Electron Lett 1998, V34, P780

L5 ANSWER 6 OF 33 CAPLUS
AN 2003:270594 CAPLUS <<LOGINID::20060804>>
DN 139:14653
ED Entered STN: 09 Apr 2003
TI Reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses
AU Washio, Kunihiko; Kouta, Hikaru; Urino, Yutaka; Hirao, Kazuyuki
CS Control Systems Operations Unit, NEC Corporation, Tokyo, 108-8001, Japan
SO Laser Institute of America [Publication] (2002), 94(Congress Proceedings - Laser Materials Processing Conference [and] Laser Microfabrication Conference, 2002, Book 2), 833-841
CODEN: LIAAED
PB Laser Institute of America
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Laser ***trimming*** of phase errors are becoming vitally important technologies for SiO2-based planar ***waveguide*** devices such as arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc. for Dense Wavelength Division Multiplexing (DWDM). Conventional phase ***trimming*** technologies based on UV excimer lasers have serious problems such as delicate and time consuming prepn. for H-loaded sensitization processes, requirement of mask-processes and difficulty in real time, high-speed phase-error correction, etc. This paper presents some representative features of novel technol. for rapid and reliable refractive-index adjustment in germanosilica-based planar ***waveguides*** using high-repetition rate ***ultrashort*** laser pulses. IR (800nm), 200 kHz, 150 ***fs*** pulses were used to increase refractive index of the planar ***waveguides*** with 100 .mu.m/s scanning speed. With increase in the irradn. power d., max. refractive-index increase up to .apprx.2 .times. 10-3 was obtained with distinct satn. at .apprx.2.2 TW/cm2. No decay in the refractive index change was obsd. even after annealing at 200.degree. for 100 h. This highly stable refractive-index increase is in consistent with the phenomena of permanent refractive-index increase obsd. by Kondo, et al. in Ge-doped SiO2-core glass fibers irradiated by ***ultrashort*** laser pulses.
ST index germanium doped silica waveguide laser
IT Fluorescence
Radiative transition
(lifetime; reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)
IT Annealing

Diffraction gratings
Excimer lasers
IR spectra
Photographic sensitization
Planar waveguides (optical)
Refractive index
Solid state lasers
(reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

IT Glass fibers, uses
RL: DEV (Device component use); USES (Uses)
(reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

IT 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

IT 12385-13-6, Hydrogen atom, uses
RL: MOA (Modifier or additive use); USES (Uses)
(reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(8) Hanada, T; IECEC Trans Electron 1997, VE80-C, P130
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(11) Minoshima, K; Opt Lett 2001, V26, P1516
(12) Miura, K; Nuclear Instruments and Methods in Physics Research B 1998, V141, P726 CAPLUS
(13) Nishii, J; Phys Rev B 1995, V52, P1661 CAPLUS
(14) Poulsen, C; Electron Lett 1995, V31, P1437
(15) Saito, T; Appl Opt 1998, V37, P2242 CAPLUS
(16) Schaffer, B; Opt Lett 2001, V26, P93
(17) Takada, K; Opt Lett 2001, V26, P64
(18) Zauner, A; Electron Lett 1998, V34, P780

L5 ANSWER 7 OF 33 CAPLUS
AN 2003:256002 CAPLUS <<LOGINID::20060804>>
DN 139:43870
ED Entered STN: 03 Apr 2003
TI Reliable refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses
AU Washio, Kunihiko; Kouta, Hikaru; Urino, Yutaka; Hirao, Kazuyuki
CS Control Systems Operations Unit, NEC Corporation, Tokyo, 108-8001, Japan
SO Laser Institute of America [Publication] (2002), 94(Congress Proceedings - Laser Materials Processing Conference [and] Laser Microfabrication Conference, 2002, Book 4), 2367-2375
CODEN: LIAAED
PB Laser Institute of America
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Laser ***trimming*** of phase errors are becoming vitally important technologies for SiO2-based planar ***waveguide*** devices such as arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc. for Dense Wavelength Division Multiplexing (DWDM). Conventional phase ***trimming*** technologies based on UV excimer lasers have serious problems such as delicate and time consuming prepn. for hydrogen-loaded sensitization processes, requirement of mask-processes and difficulty in real time, high-speed phase-error correction, etc. This paper presents some representative features of novel technol. for rapid and reliable refractive-index adjustment in germanosilica-based planar ***waveguides*** using high-repetition rate ***ultrashort*** laser pulses. IR (800 nm), 200 kHz, 150 ***fs*** pulses were used to

increase refractive index of the planar ***waveguides*** with 100 .mu.m/s scanning speed. With increase in the irradn. power d., max. refractive-index increase up to .apprx.2 .times. 10-3 was obtained with distinct satn. at .apprx.2.2 TW/cm2. No decay in the refractive index change was obsd. even after annealing at 200.degree. for 100 h. This highly stable refractive-index increase is in consistent with the phenomena of permanent refractive-index increase obsd. by Kondo, et al. in Ge-doped SiO2-core glass fibers irradiated by ***ultrashort*** laser pulses.

ST reflective index germanium silica waveguide laser pulse

IT IR spectra
(of planar lightwave circuit in presence/absence of ***ultrashort*** pulse laser irradn.)

IT Optical waveguides
Planar waveguides (optical)
Refractive index
(refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

IT Optical glass
RL: DEV (Device component use); USES (Uses)
(refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

IT 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

IT 7440-56-4, Germanium, uses 12385-13-6, Hydrogen atom, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(refractive-index adjustment in Ge-doped silica-core planar waveguides by high-repetition rate ***femtosecond*** laser pulses)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(17) Takada, K; Opt Lett 2001, V26(Jan), P64
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L5 ANSWER 8 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:129541 CAPLUS <<LOGINID::20060804>>
ED Entered STN: 20 Feb 2003
TI Method of index ***trimming*** a ***waveguide*** and apparatus formed of the same
IN Dugan, Mark; Clark, William; Said, Ali A.; Maynard, Robert L.; Bado, Philippe
PA Translume, Inc., USA
SO U.S. Pat. Appl. Publ.
CODEN: USXXCO
DT Patent
LA English
IC ICM G02B006-18
ICS G02B006-26; G02B006-10
INCL 385124000; 385027000; 385039000; 385146000
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003035640	A1	20030220	US 2001-930929	20010816

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    US 6768850          B2    20040727
PRAI US 2001-930929           20010816
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 US 20030035640  ICM    G02B006-18
                 ICS    G02B006-26; G02B006-10
                 INCL   385124000; 385027000; 385039000; 385146000
                 IPCI   G02B0006-18 [ICM,7]; G02B0006-26 [ICS,7]; G02B0006-10
                        [ICS,7]
                 IPCR   G02B0006-10 [N,A]; G02B0006-10 [N,C*]; G02B0006-12
                        [N,A]; G02B0006-12 [N,C*]; G02B0006-122 [I,A];
                        G02B0006-122 [I,C*]; G02B0006-125 [I,A]; G02B0006-125
                        [I,C*]; G02B0006-13 [I,A]; G02B0006-13 [I,C*]
                 NCL    385/124.000
                 ECLA   G02B006/122; G02B006/125; G02B006/13
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AB A method of using a beam of ***ultra*** - ***short*** laser pulses, having pulse durations below 10 ***picoseconds*** , to adjust an optical characteristic within an optical medium is provided. The beams would have an intensity above a threshold for altering the index of refraction of a portion of the optical medium. The beams could be selectively applied to the optical medium and any structures formed or existing therein. Thus, the beam could be moved within a waveguide in the optical medium to alter the index of refraction of the waveguide forming any number of different longitudinal index of refraction profiles. The beam could also be moved within the optical medium near the waveguide to alter an effective index of refraction of a signal traveling within the waveguide. The techniques described can be used to improve, alter or correct performance of waveguide-based optical devices, such as arrayed waveguide gratings and cascaded planar waveguide interferometers.

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L5 ANSWER 9 OF 33 CAPLUS

AN 2002:920120 CAPLUS <<LOGINID::20060804>>

DN 138:195528

ED Entered STN: 04 Dec 2002

TI Pulse contrast enhancement of high-energy pulses using a gas-filled hollow waveguide

AU Homoelle, Doug; Foster, Mark; Gaeta, Alexander L.; Yanovsky, V.; Mourou, G.

CS School of Applied and Engineering Physics, Cornell University, Ithaca, NY, 14853, USA

SO Trends in Optics and Photonics (2002), 73(Technical Digest - Conference on Lasers and Electro-Optics, 2002), CPDA4/1-CPDA4/3
CODEN: TOPRBS

PB Optical Society of America

DT Journal

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB We demonstrate theor. and exptl. that the technique of nonlinear ***ellipse*** rotation in a gas-filled hollow ***waveguide*** greatly improves the contrast of microjoule-to-millijoule ***femtosecond*** laser pulses. This technique has numerous advantages over competing techniques and will facilitate the development of the next generation of ultra-high-peak power ***femtosecond*** laser systems.
ST pulse contrast enhancement gas filled hollow ***waveguide*** ***ellipse*** rotation
IT Autocorrelation function
Optical ***waveguides***
Rotation
(pulse contrast enhancement of high-energy pulses using nonlinear ***ellipse*** rotation in gas-filled hollow ***waveguide***)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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AN 1998:425502 CAPLUS <<LOGINID::20060804>>
DN 129:209032
ED Entered STN: 11 Jul 1998
TI Nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz radiation
AU Fumeaux, C.; Herrmann, W.; Kneubuhl, F. K.; Rothuizen, H.
CS Inst. Quantum Electronics, Swiss Fed. Inst. Technol. (ETH), Zurich, CH-8093), Switz.
SO Infrared Physics & Technology (1998), 39(3), 123-183
CODEN: IPTEEY; ISSN: 1350-4495
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB The authors report on the realization and the exptl. study of thin-film Ni-NiO-Ni diodes with integrated IR antennas. These diodes are applied as detectors and mixers of 28-THz CO2-laser radiation with difference frequencies up to 176 GHz. They constitute a mech. stable alternative to the point-contact MOM diodes used today in heterodyne detection of such high frequencies. Thus, they represent the extension of present millimeter-wave and microwave thin-film and antenna techniques to the IR. The authors' thin-film Ni-NiO-Ni diodes are fabricated on SiO2/Si substrates with the help of electron-beam lithog. at the IBM research lab. (Ruschlikon, Switzerland). The authors have reduced the contact area to 110 nm x 110 nm to achieve a fast response of the device. This contact area is in the order of those of point-contact diodes and represents the smallest ever reported for thin-film MOM diodes. The thin NiO layer with a thickness of .apprx.35 .ANG. is deposited by sputtering. the authors' thin-film diodes are integrated with planar dipole, bow-tie and spiral antennas that couples the incident field to the contact. The 2nd deriv. 1"(V) of the nonlinear 1(V) characteristics at the bail voltage applied to the diode is measured at a frequency of 10kHz. It dets. the detection and 2nd-order mixing performed with the diode for frequencies from d.c. to at least 30 THz. The 1"(V) characteristics exhibit for low bias voltage Vbias a linear dependence, which is followed by a satn. and a max. for high Vbias. The zero-bias resistance of the diode is in the order of 100 .OMEGA.. It is not strictly inversely proportional to the contact area of the diode. The 1st application of the authors' thin-film diodes was the detection of continuous-wave CO2-laser radiation. The measured d.c. signal generated by the diode when illuminated with 10.60 .mu.m radiation includes a polarization-independent contribution, caused by thermal effects. This contribution is independent of the contact area and of the type of integrated antenna. The polarization-dependent contribution of the signal originates in the rectification of the antenna currents in the diode by nonlinear tunneling through the thin NiO layer. It follows a cosine-squared dependence on the angle of orientation of the linear polarization, as expected from antenna theory. For the linearly polarized dipole and bow-tie antennas, the max. detection signals are therefore

measured for the polarization parallel to the antenna axis. Bow-tie antennas with a half length of 2.3 .mu.m generate the highest detection signals. The full length of these antennas corresponds to 3/2 of the wavelength of the incident 10.6-.mu.m radiation in the supporting Si substrate. The relevance of the substrate wavelength confirms that the authors' antennas are more sensitive to the radiation incident from the substrate side. The time of response of the authors' thin-film diode is not limited by the speed of the electron tunneling effect, but by the RC time const. of the diode circuitry. Thus, the overall best performances are attained by the diodes with the smallest contact areas and corresponding capacitances. The study of the polarization response of the authors' integrated asym. spiral antennas revealed the contribution of an unbalanced mode propagating on the antenna arms beside the fundamental balanced mode. The imbalance is caused by the reactive impedance of the diode and by the asymmetry of the antenna arms in the feed region. The response of the diode is influenced by reflection of the antenna currents near the end of the spiral arms. The resulting polarization of the authors' spiral antenna is therefore not the expected circular polarization, yet an ***elliptical*** polarization with abaxial ratio in the order of 0.12. Also, the authors demonstrated the presence of two distinct additive thermal effects besides the fast antenna-induced contribution by the measurement of the response of the authors' thin-film diodes to 35 ***ps*** optical-free-induction decay (OFID) CO2-laser pulses. The measured characteristic time of these two relatively slow relaxations are .gamma.1.apprxeq.100ns and .gamma.2.apprxeq.15 ns. These exponential relaxations obsd. are explained by thermal diffusion in the SiO2 and in the Ni layers of the authors' structures. These time consts. show that thermal effects influence mixing processes at low difference frequencies. For the 1st time, operation of thin-film diodes as mixers of 28-THz radiation was demonstrated. Difference frequencies up to 176 GHz were measured when the diode was irradiated by two CO2-laser beams and microwaves generated by a Gunn oscillator working at 58.8 GHz. These difference frequencies were generated in mixing processes from the 2nd to the 5th order. These expts. were performed with thin-film Ni-NiO diodes with the min. contact area of 0.012 .mu.m2 and integrated resonant bow-tie antennas. The transmission of the high-frequency signals to the spectrum analyzer was accomplished using integrated Rh ***waveguides*** and flip-chip connections. The diode and the antenna were irradiated through the substrate, taking advantage of the better sensitivity of the antenna to radiation incident from the substrate side. The dependence on the linear polarization of the mixing signal matches almost perfectly the ideal cosine-squared dependence predicted by antenna theory for bow-tie antennas. A ratio of the mixing signals for the polarization parallel to the axis vs. the cross-polarization of over 50 was attained. The signal-to-noise ratios of the authors' mixing signals demonstrate the potential of the authors' type of diodes to respond to even higher carrier and difference frequencies. Also higher-order mixing can be achieved with the authors' thin-film diodes.

ST nanometer thin film nickel oxide diode; THz laser radiation detection mixing

IT Antennas
(IR; nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz and laser radiation)

IT Optical detectors
(THz; nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz and laser radiation)

IT Laser radiation
(detection and mixing; nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz and laser radiation)

IT Diodes
Electron beam lithography
Semiconductor device fabrication
Sputtering
(nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz and laser radiation)

IT Tunneling
(nonlinear; nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz and laser radiation)

IT 124-38-9, Carbon dioxide, uses 7440-21-3, Silicon, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30

THz and laser radiation)
IT 1313-99-1, Nickel monoxide, properties 7440-02-0, Nickel, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(nanometer thin-film Ni-NiO-Ni diodes for detection and mixing of 30 THz and laser radiation)
RE.CNT 111 THERE ARE 111 CITED REFERENCES AVAILABLE FOR THIS RECORD
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AN 1986:635364 CAPLUS <<LOGINID::20060804>>
DN 105:235364
ED Entered STN: 26 Dec 1986
TI Polarization effects in birefringent fiber-optic ***waveguides*** with ***elliptical*** borosilicate cladding
AU Grigor'yants, V. V.; Zalogin, A. N.; Ivanov, G. A.; Isaev, V. A.; Kozel, S. M.; Listvin, V. N.; Chamorovskii, Yu. K.
CS Inst. Radiotekh. Elektron., Moscow, USSR
SO Kvantovaya Elektronika (Moscow) (1986), 13(10), 2080-4
CODEN: KVEKA3; ISSN: 0368-7147
DT Journal
LA Russian
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Single-mode fiber-optic ***waveguides*** (SFW) with an ***elliptical*** borosilicate cladding were developed and their polarizational characteristics were studied. The mode birefringence in them is independent of the radiation frequency and depends linearly on the SFW temp. The beat length was .apprx.10 mm at .lambda. = 0.85 .mu.m, the dispersion of the polarization modes was 300 ***ps*** /km. The losses were as high as 5-10 decibels/km at .lambda. = 0.85 .mu.m, the mode

coupling parameter was 2 .times. 10-4 m-1. Possible use is considered of the ***waveguide*** for depolarization of the nonmonochromatic radiation and as tunable delay lines.
ST waveguide fiber optic polarization
IT ***Waveguides***
(optical, polarization characteristics of birefringent, with ***elliptical*** borosilicate cladding)
IT Fiber optics
(***waveguides*** , polarization characteristics of, with ***elliptical*** borosilicate cladding)

L5 ANSWER 12 OF 33 INSPEC (C) 2006 IET on STN
AN 2006:8775210 INSPEC <<LOGINID::20060804>>
TI ***Trimming*** silica planar lightwave circuits using deep ultraviolet ultrafast lasers
AU Chen, K.P.; (Dept. of Electr. Eng., Pittsburgh Univ., PA, USA), Chen, Q.; Buric, M.; Nikumb, S.
SO 2005 Conference on Lasers and Electro-Optics (CLEO) (IEEE Cat. No. 05TH8796), Vol. 2, 2005, p. 1291-3 Vol. 2 of 3 vol. (xxxiv+2350) pp., 5 refs.
ISBN: 1 55752 795 4
Price: 1 55752 795 4/2005/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2005 Conference on Lasers and Electro-Optics (CLEO), Baltimore, MD, USA, 22-27 May 2005
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB ***Trimming*** phase and birefringence errors in hydrogen-free Mach-Zehnder planar ***waveguide*** circuits have been demonstrated with a deep ultraviolet ***femtosecond*** laser (258nm, 150fs) achieving refractive index change of gt;3.8.times.10-4 and complete compensation of the intrinsic birefringence
CC A4280L Optical waveguides and couplers; A4282 Integrated optics; A4262A Laser materials processing; A4260H Laser beam characteristics and interactions; B4130 Optical waveguides; B4140 Integrated optics; B4360B Laser materials processing; B4330 Laser beam interactions and properties
CT birefringence; high-speed optical techniques; laser beam machining; laser beams; optical planar ***waveguides*** ; refractive index; silicon compounds; ultraviolet sources
ST silica planar lightwave circuits; deep ultraviolet ultrafast lasers; trimming phase; birefringence errors; hydrogen-free Mach-Zehnder planar waveguide circuits; femtosecond laser; refractive index

L5 ANSWER 13 OF 33 INSPEC (C) 2006 IET on STN
AN 2006:8766739 INSPEC <<LOGINID::20060804>>
TI Influence of diffraction by a rectangular aperture on the aspect ratio of ***femtosecond*** direct-write ***waveguides***
AU Moh, K.J.; Tan, Y.Y.; Yuan, X.-C.; (Sch. of Electr. & Electron. Eng., Nanyang Technol. Univ., Singapore), Low, D.K.Y.; Li, Z.L.
SO Optics Express (19 Sept. 2005), vol.13, no.19, 15 refs.
CODEN: OPEXFF, ISSN: 1094-4087
Price: 1094-4087/2005/$15.00
URL: http://www.opticsexpress.org
Collection URL: http://www.opticsexpress.org/
Published by: Opt. Soc. America, USA
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB Rectangular apertures have been used as a simple means to approximate ***elliptical*** Gaussian beams in ***femtosecond*** direct writing systems to correct for the elongated focus inherent in low numerical aperture (NA) systems. In this work it is recognized that the rectangular aperture, more accurately functions as a diffractive element and hence redistributes the intensity gradient around the focus in accordance to the physical effects of diffraction. A diffractive model for the technique was proposed and confirmed experimentally to investigate the effects of diffraction and the extent of its influence on the focus shape over different conditions. It was found that because of diffraction, the radius of curvature for the leading edge of the focal spot is dissimilar

from its trailing edge. However this effect is mitigated when lower processing energy is used and circular ***waveguides*** can be obtained
CC A4280W Ultrafast optical techniques; A4280L Optical waveguides and couplers; A4225F Optical diffraction and scattering; A4262A Laser materials processing
CT diffractive optical elements; high-speed optical techniques; laser beams; laser materials processing; light diffraction; optical focusing; optical ***waveguides***
ST optical diffraction; rectangular aperture; aspect ratio; femtosecond waveguides; direct-write waveguides; elliptical Gaussian beams; femtosecond direct writing systems; elongated focus correction; low-numerical aperture systems; diffractive element; intensity gradient redistribution; physical diffraction effects; focus shape; focal spot; circular waveguides

L5 ANSWER 14 OF 33 INSPEC (C) 2006 IET on STN
AN 2005:8476697 INSPEC DN A2005-16-0760L-009; B2005-08-4125-024 <<LOGINID::20060804>>
TI An ***elliptical*** talbot interferometer for fiber Bragg grating fabrication
AU Pissadakis, S.; (Inst. of Electron. Struct. & Laser, Heraklion, Greece), Reekie, L.
SO Review of Scientific Instruments (June 2005), vol.76, no.6, p. 66101-1-3, 7 refs.
CODEN: RSINAK, ISSN: 0034-6748
SICI: 0034-6748(200506)76:6L.66101:ETIF;1-O
Price: 0034-6748/2005/76(6)/01/01/0565(3)/$22.50
Doc.No.: S0034-6748(05)22006-3
Published by: AIP, USA
DT Journal
TC Experimental
CY United States
LA English
AB A simple and easily aligned two-mirror interferometer for fabricating Bragg gratings in optical bulk materials, ***waveguides*** , and fibers is presented. The interferometer consists of a simple phase mask splitting element and two dielectric mirrors optimized for maximum reflectance at an incident angle of 45 deg. By choosing a suitable optical configuration the half-period of the phase mask is patterned on the interference plane, while a wide range of periodicities can be inscribed by adjusting the relative angles between the interferometer folding mirrors. The operation of the interferometer is demonstrated for grating inscription in Ge-doped optical fibers, using 213 nm, 150 ***ps*** Nd:YAG radiation
CC A0760L Optical interferometry; A4281B Optical fibre fabrication, cladding, splicing, joining; A4281W Other fibre optical devices and techniques; B4125 Fibre optics
CT Bragg gratings; germanium; laser cavity resonators; light interferometers; masks; mirrors; neodymium; optical fibre fabrication; solid lasers; Talbot effect
ST elliptical Talbot interferometer; fibre Bragg grating fabrication; two-mirror interferometer; optical bulk materials; waveguides; phase mask splitting element; dielectric mirrors; maximum reflectance; incident angle; optical configuration; phase mask half-period; interference plane; periodicities; interferometer folding mirrors; grating inscription; Ge-doped optical fibers; Nd:YAG radiation; 213 nm; 150 ps; YAG:Nd; YAl5O12:Nd
CHI Ge ss, Ge el, Ge dop; YAl5O12:Nd ss, YAl5O12 ss, Al5O12 ss, Al5 ss, O12 ss, Al ss, Nd ss, O ss, Y ss, Nd el, Nd dop
PHP wavelength 2.13E-07 m; time 1.5E-10 s
ET O; Ge; Nd; Al*O*Y; Al sy 3; sy 3; O sy 3; Y sy 3; YAl5O; Y cp; cp; Al cp; O cp; Al*O; Al5O; Al; Y

L5 ANSWER 15 OF 33 INSPEC (C) 2006 IET on STN
AN 2005:8312434 INSPEC DN A2005-08-4265J-004; B2005-04-4340J-006 <<LOGINID::20060804>>
TI The influence of self-focusing and filamentation on refractive index modifications in fused silica using intense ***femtosecond*** pulses
AU Saliminia, A.; Nguyen, N.T.; Chin, S.L.; Vallee, R. (Center for Opt. Photonics & Lasers, Laval Univ., Que., Canada)
SO Optics Communications (16 Nov. 2004), vol.241, no.4-6, p. 529-38, 34 refs.
CODEN: OPCOB8, ISSN: 0030-4018

SICI: 0030-4018(20041116)241:4/6L.529:ISFF;1-I
Price: 0030-4018/2004/$30.00
Published by: Elsevier, Netherlands
DT Journal
TC Experimental
CY Netherlands
LA English
AB The interaction of focused ***femtosecond*** infrared laser pulses at 1 kHz repetition rate with bulk fused silica is thoroughly investigated. The interplay between self-focusing and filamentation of the laser pulses is analyzed for a broad range of focusing conditions. It is shown that even in the case of very tight focusing, filamentation is observed as evidenced by the scanning electron microscope (SEM) pictures. Preliminary results show that using such a tight focusing geometry and at input powers above the critical power for self-focusing in silica, ***waveguide*** structures with ***elliptical*** cores are inscribed within the glass by moving the sample perpendicular to the laser beam propagation direction
CC A4265J Beam trapping, self focusing, thermal blooming, and related effects; A7820D Optical constants and parameters (condensed matter); A4270C Optical glass; A4280W Ultrafast optical techniques; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4260H Laser beam characteristics and interactions; A4280L Optical waveguides and couplers; B4340J Optical self-focusing and related effects; B4110 Optical materials; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4130 Optical waveguides
CT high-speed optical techniques; laser beams; optical glass; optical self-focusing; optical ***waveguides*** ; refractive index; scanning electron microscopy; silicon compounds
ST optical self-focusing; filamentation; refractive index modifications; fused silica; intense pulses; femtosecond pulses; focused laser pulses; infrared laser pulses; scanning electron microscope pictures; tight focusing geometry; waveguide structures; laser beam propagation; 1 kHz; SiO2
CHI SiO2 bin, O2 bin, Si bin, O bin
PHP frequency 1.0E+03 Hz
ET O; Si

L5 ANSWER 16 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8193151 INSPEC DN A2005-01-4280L-027; B2005-01-4130-031 <<LOGINID::20060804>>
TI ***Trimming*** phase and birefringence errors in planar lightwave circuits with deep ultraviolet ***femtosecond*** laser
AU Chen, Q.; (Integrated Manuf. Technol. Inst., Nat. Res. Council of Canada, London, Ont., Canada), Chen, K.P.; Buric, M.; Nikumb, S.
SO Electronics Letters (16 Sept. 2004), vol.40, no.19, p. 1179-81, 8 refs.
CODEN: ELLEAK, ISSN: 0013-5194
SICI: 0013-5194(20040916)40:19L.1179:TPBE;1-C
Published by: IEE, UK
DT Journal
TC Practical; Experimental
CY United Kingdom
LA English
AB A deep ultraviolet ***femtosecond*** laser was employed to trim phase and birefringence errors in silica planar lightwave circuits. A permanent refractive index change of 3.8.times.10-4 and a birefringence change of 1.0.times.10-4 were induced in hydrogen-free Mach-Zehnder planar ***waveguide*** circuits. The ultrafast laser enhances the ultraviolet photosensitivity response in silica ***waveguides*** by two orders of magnitude greater than that of a nanosecond 248 nm KrF excimer laser
CC A4280L Optical waveguides and couplers; A4282 Integrated optics; A4262 Laser applications; A4280W Ultrafast optical techniques; A0760L Optical interferometry; B4130 Optical waveguides; B4140 Integrated optics; B4360B Laser materials processing
CT birefringence; errors; high-speed optical techniques; laser beam machining; Mach-Zehnder interferometers; optical planar ***waveguides*** ; refractive index; silicon compounds
ST birefringence errors; trimming phase errors; planar lightwave circuits; deep ultraviolet femtosecond laser; refractive index; hydrogen free Mach-Zehnder planar waveguide circuit; ultraviolet photosensitivity; silica waveguies; KrF excimer laser; SiO2
CHI SiO2 int, O2 int, Si int, O int, SiO2 bin, O2 bin, Si bin, O bin
ET F; O; Si; O*Si; SiO; Si cp; cp; O cp; F*Kr; KrF; Kr cp; F cp

L5 ANSWER 17 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8126886 INSPEC DN A2004-22-4262A-069; B2004-11-4360B-131 <<LOGINID::20060804>>
TI Reliable refractive index adjustment in Ge-doped silica-core planar ***waveguides*** by high-repetition rate ***femtosecond*** laser pulses
AU Washio, K.; (Control Syst. Oper. Unit, NEC Corp., Tokyo, Japan), Kouta, H.; Urino, Y.; Hirao, K.
SO ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Vol.4, 2002, p. 2947-55 Vol.4 of 3007 pp., 18 refs.
ISBN: 0 912035 72 2
Published by: LIA, Orlando, FL, USA
Conference: ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Scottsdale, AZ, USA, 14-17 Oct. 2002
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB Laser ***trimming*** of phase errors are becoming vitally important technologies for silica-based planar ***waveguide*** devices such as arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc. for Dense Wavelength Division Multiplexing (DWDM). Conventional phase ***trimming*** technologies based on UV excimer lasers have serious problems such as delicate and time consuming preparation for hydrogen-loaded sensitization processes, requirement of mask-processes and difficulty in real time, high-speed phase-error correction, etc. This paper presents some representative features of our novel technology for rapid and reliable refractive-index adjustment in germanosilica-based planar ***waveguides*** utilizing high-repetition rate ***ultrashort*** laser pulses. Infrared (800 nm), 200 kHz, 150 ***fs*** pulses were used to increase refractive index of the planar ***waveguides*** with 100 .mu.m/s scanning speed. With increase in the irradiation power density, maximum refractive-index increase up to 2.times.10-3 was obtained with distinct saturation at around 2.2 TW/cm2. No decay in the refractive index change was observed even after annealing at 200 .degree.C for 100 hours. This highly stable refractive-index increase is in consistent with the phenomena of permanent refractive-index increase observed by Kondo, et al. in Ge-doped silica-core glass fibers irradiated by ***ultrashort*** laser pulses
CC A4262A Laser materials processing; A7820D Optical constants and parameters (condensed matter); A4280W Ultrafast optical techniques; A7847 Ultrafast optical measurements in condensed matter; A4280L Optical waveguides and couplers; A4282 Integrated optics; A6180B Ultraviolet, visible and infrared radiation effects; A8140G Other heat and thermomechanical treatments; B4360B Laser materials processing; B4130 Optical waveguides; B4140 Integrated optics
CT annealing; germanium; high-speed optical techniques; laser beam effects; laser beam machining; optical planar ***waveguides*** ; refractive index; silicon compounds
ST refractive index adjustment; Ge-doped silica-core planar waveguides; high-repetition rate femtosecond laser pulses; laser trimming; phase errors; silica-based planar waveguide devices; arrayed-waveguide gratings; directional couplers; dense wavelength division multiplexing; DWDM; phase trimming; germanosilica-based planar waveguides; high-repetition rate ultrashort laser pulses; infrared pulses; 150 fs pulses; 100 .mu.m/s scanning speed; irradiation power density; refractive-index increase; annealing; 800 nm; 200 kHz; 150 fs; 200 degC; 100 hour; SiO2:Ge
CHI SiO2:Ge ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, Ge el, Ge dop
PHP wavelength 8.0E-07 m; frequency 2.0E+05 Hz; time 1.5E-13 s; temperature 4.73E+02 K; time 3.6E+05 s
ET Ge*O; O2:Ge; Ge doping; doped materials; O; Ge; O*Si; SiO; Si cp; cp; O cp; Si; C

L5 ANSWER 18 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8126841 INSPEC DN A2004-22-4262A-033; B2004-11-4360B-093 <<LOGINID::20060804>>
TI Reliable refractive-index adjustment in Ge-doped silica-core planar ***waveguides*** by high-repetition rate ***femtosecond*** laser pulses
AU Washio, K.; (Corp. Syst. Oper. Unit, NEC Corp., Tokyo, Japan), Kouta, H.; Urino, Y.; Hirao, K.

SO ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Vol.4, 2002, p. 2367-75 Vol.4 of 3007 pp., 18 refs.
ISBN: 0 912035 72 2
Published by: LIA, Orlando, FL, USA
Conference: ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Scottsdale, AZ, USA, 14-17 Oct. 2002
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB Laser ***trimming*** of phase errors are becoming vitally important technologies for silica-based planar ***waveguide*** devices such as arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc. for Dense Wavelength Division Multiplexing (DWDM). Conventional phase ***trimming*** technologies based on UV excimer lasers have serious problems such as delicate and time consuming preparation for hydrogen-loaded sensitization processes, requirement of mask-processes and difficulty in real time, high-speed phase-error correction, etc. This paper presents some representative features of our novel technology for rapid and reliable refractive-index adjustment in germanosilica-based planar ***waveguides*** utilizing high-repetition rate ***ultrashort*** laser pulses. Infrared (800 nm), 200 kHz, 150 ***fs*** pulses were used to increase refractive index of the planar ***waveguides*** with 100 .mu.m/s scanning speed. With increase in the irradiation power density, maximum refractive-index increase up to 2.times.10-3 was obtained with distinct saturation at around 2.2 TW/cm2 . No decay in the refractive index change was observed even after annealing at 200 .degree.C for 100 hours. This highly stable refractive-index increase is in consistent with the phenomena of permanent refractive-index increase observed by Kondo, et al. in Ge-doped silica-core glass fibers irradiated by ***ultrashort*** laser pulses
CC A4262A Laser materials processing; A7820D Optical constants and parameters (condensed matter); A7847 Ultrafast optical measurements in condensed matter; A8140G Other heat and thermomechanical treatments; A4280W Ultrafast optical techniques; A6180B Ultraviolet, visible and infrared radiation effects; A4280L Optical waveguides and couplers; B4360B Laser materials processing; B4130 Optical waveguides
CT germanium; high-speed optical techniques; laser beam annealing; laser beam effects; optical planar ***waveguides*** ; refractive index; silicon compounds; wavelength division multiplexing
ST refractive-index adjustment; Ge-doped silica-core planar waveguides; high-repetition rate femtosecond laser pulses; laser trimming; phase errors; silica-based planar waveguide devices; arrayed-waveguide gratings; directional couplers; dense wavelength division multiplexing; phase trimming technologies; UV excimer lasers; hydrogen-loaded sensitization processes; mask-processes; high-speed phase-error correction; germanosilica-based planar waveguides; high-repetition rate ultrashort laser pulses; irradiation power density; refractive index change; annealing; refractive-index increase; Ge-doped silica-core glass fibers
ET Ge; C

L5 ANSWER 19 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8096733 INSPEC DN A2004-20-4262A-048; B2004-10-4360B-046 <<LOGINID::20060804>>
TI Reliable refractive-index adjustment in Ge-doped silica-core planar ***waveguides*** by high-repetition rate ***femtosecond*** laser pulses
AU Washio, K.; (Control Syst. Oper. Unit, NEC Corp., Tokyo, Japan), Kouta, H.; Urino, Y.; Hirao, K.
SO ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Vol.3, 2002, p. 1567-75 Vol.3 of 3007 pp., 18 refs.
ISBN: 0 912035 72 2
Published by: LIA, Orlando, FL, USA
Conference: ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Scottsdale, AZ, USA, 14-17 Oct. 2002
DT Conference; Conference Article
TC Practical
CY United States
LA English
AB Laser ***trimming*** of phase errors are becoming vitally important technologies for silica-based planar ***waveguide*** devices such as arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc.

for Dense Wavelength Division Multiplexing (DWDM). Conventional phase ***trimming*** technologies based on UV excimer lasers have serious problems such as delicate and time consuming preparation for hydrogen-loaded sensitization processes, requirement of mask-processes and difficulty in real time, high-speed phase-error correction, etc. This paper presents some representative features of our novel technology for rapid and reliable refractive-index adjustment in germanosilica-based planar ***waveguides*** utilizing high-repetition rate ***ultrashort*** laser pulses. Infrared (800 nm), 200 kHz, 150 ***fs*** pulses were used to increase refractive index of the planar ***waveguides*** with 100 .mu.m/s scanning speed. With increase in the irradiation power density, maximum refractive-index increase up to 2.times.10-3 was obtained with distinct saturation at around 2.2 TW/cm2. No decay in the refractive index change was observed even after annealing at 200.degree.C for 100 hours. This highly stable refractive-index increase is in consistent with the phenomena of permanent refractive-index increase observed by Kondo, et al. in Ge-doped silica-core glass fibers irradiated by ***ultrashort*** laser pulses

CC A4262A Laser materials processing; A4280F Gratings, echelles; A4280L Optical waveguides and couplers; A4280S Optical communication devices; A4255G Excimer lasers; A4260B Design of specific laser systems; A0660J High-speed techniques (microsecond or shorter); A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4280W Ultrafast optical techniques; A4281W Other fibre optical devices and techniques; B4360B Laser materials processing; B4130 Optical waveguides; B6150C Communication switching; B6230 Switching centres and equipment; B6260M Multiplexing and switching in optical communication; B4320C Gas lasers; B4125 Fibre optics; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning

CT arrayed ***waveguide*** gratings; excimer lasers; germanium; high-speed optical techniques; hydrogen; laser beam machining; optical fibres; optical planar ***waveguides*** ; refractive index; silicon compounds; wavelength division multiplexing

ST rrefractive-index adjustment; Ge-doped silica-core planar waveguide device; high-repetition rate; femtosecond laser pulse; laser trimming; phase error; arrayed-waveguide grating; AWGs; dense wavelength division multiplexing; DWDM; UV excimer laser; phase trimming technology; hydrogen-loaded sensitization process; mask-process; high-speed phase-error correction; germanosilica-based planar waveguide; ultrashort laser pulse; refractive-index; Ge-doped silica-core glass fibers irradiation; 200 kHz; 800 nm; 150 fs; 200 C; 100 hours

CHI SiO2 ss, Ge ss, O2 ss, Si ss, O ss, Ge el, Ge dop

PHP frequency 2.0E+05 Hz; wavelength 8.0E-07 m; time 1.5E-13 s; temperature 4.73E+02 K; time 3.6E+05 s

ET O; Ge; Si; C

L5 ANSWER 20 OF 33 INSPEC (C) 2006 IET on STN

AN 2004:8090944 INSPEC DN A2004-20-4280W-017; B2004-10-4330-017 <<LOGINID::20060804>>

TI Nonlinear ***ellipse*** rotation of high energy ***femtosecond*** optical pulses for pulse contrast enhancement

AU Mohebbi, M. (Dept. of Electr. & Comput. Eng., Alberta Univ., Edmonton, Alta., Canada)

SO Optical and Quantum Electronics (March 2004), vol.36, no.4, p. 383-7, 12 refs.
CODEN: OQELDI, ISSN: 0306-8919
SICI: 0306-8919(200403)36:4L.383:NERH;1-1
Published by: Kluwer Academic Publishers, Netherlands

DT Journal

TC Experimental

CY Netherlands

LA English

AB An argon filled hollow fiber with metal coating on the inner glass surface has been used for nonlinear ***ellipse*** rotation of ***femtosecond*** optical pulses at 800 nm. Pulse contrast can be achieved using this ***waveguide*** with higher transmission compared with a fused silica ***waveguide***

CC A4280W Ultrafast optical techniques; A4260H Laser beam characteristics and interactions; A4281W Other fibre optical devices and techniques; A4265 Nonlinear optics; A4225J Optical polarization; B4330 Laser beam interactions and properties; B4125 Fibre optics; B4340 Nonlinear optics and devices

CT high-speed optical techniques; laser beams; light polarisation; nonlinear

optics; optical fibres; optical rotation
ST, nonlinear ellipse rotation; high energy femtosecond optical pulses; pulse contrast enhancement; argon filled hollow fiber; metal coating; inner glass surface; polarization ellipse; 800 nm
PHP wavelength 8.0E-07 m

L5 ANSWER 21 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8082129 INSPEC DN A2004-20-6180B-002; B2004-10-4330B-040 <<LOGINID::20060804>>
TI Reliable refractive-index adjustment in Ge-doped silica-core planar ***waveguides*** by high-repetition rate ***femtosecond*** laser pulses
AU Washio, K.; (Control Syst. Oper. Unit, NEC Corp., Tokyo, Japan), Kouta, H.; Urino, Y.; Hirao, K.
SO ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Vol.2, 2002, p. 833-41 Vol.2 of 3007 pp., 18 refs.
ISBN: 0 912035 72 2
Published by: LIA, Orlando, FL, USA
Conference: ICALEO 2002. 21st International Congress on Applications of Lasers and Electro-Optics, Scottsdale, AZ, USA, 14-17 Oct. 2002
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB Laser ***trimming*** of phase errors are becoming vitally important technologies for silica-based planar ***waveguide*** devices such as arrayed- ***waveguide*** gratings (AWGs), directional couplers, etc. for dense wavelength division multiplexing (DWDM). Conventional phase ***trimming*** technologies based on UV excimer lasers have serious problems such as delicate and time consuming preparation for hydrogen-loaded sensitization processes, requirement of mask-processes and difficulty in real time, high-speed phase-error correction, etc. This paper presents some representative features of our novel technology for rapid and reliable refractive-index adjustment in germanosilica-based planar ***waveguides*** utilizing high-repetition rate ***ultrashort*** laser pulses. Infrared (800 nm), 200 kHz, 150 ***fs*** pulses were used to increase refractive index of the planar ***waveguides*** with 100 .mu.m/s scanning speed. With increase in the irradiation power density, maximum refractive-index increase up to 2 .times. 10-3 was obtained with distinct saturation at around 2.2 TW/crn2 . No decay in the refractive index change was observed even after annealing at 200.degree.C for 100 hours. This highly stable refractive-index increase is in consistent with the phenomena of permanent refractive-index increase observed by Kondo, et al. in Ge-doped silica-core glass fibers irradiated by ***ultrashort*** laser pulses
CC A6180B Ultraviolet, visible and infrared radiation effects; A4280W Ultrafast optical techniques; A4280L Optical waveguides and couplers; A7820D Optical constants and parameters (condensed matter); A4280S Optical communication devices; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4282 Integrated optics; A8140G Other heat and thermomechanical treatments; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4130 Optical waveguides; B6260C Optical communication equipment; B4140 Integrated optics
CT annealing; germanium; laser beam effects; optical communication equipment; optical planar ***waveguides*** ; optical pulse generation; refractive index; refractive index measurement
ST refractive-index adjustment; Ge-doped silica-core planar waveguides; high-repetition rate femtosecond laser pulses; laser trimming; annealing; irradiation power density; 800 nm; 200 kHz; 150 fs; 100 mum/s; 200 degC; 100 hour; SiO2:Ge
CHI SiO2:Ge ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, Ge el, Ge dop
PHP wavelength 8.0E-07 m; frequency 2.0E+05 Hz; time 1.5E-13 s; velocity 1.0E-04 m/s; temperature 4.73E+02 K; time 3.6E+05 s
ET Ge*O; O2:Ge; Ge doping; doped materials; O; Ge; O*Si; SiO; Si cp; cp; O cp; Si; C

L5 ANSWER 22 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8023931 INSPEC DN A2004-16-4265J-005; B2004-08-4340J-008 <<LOGINID::20060804>>
TI Light bullets in ***waveguides*** with the cubic nonlinear Kerr effect
AU Goncharenko, A.M.; Garanovich, I.L. (Div. for Opt. Problems in Inf. Technol., Nat. Acad. of Sci. of Belarus, Belarus)

SO Proceedings of LFNM 2003. 5th International Workshop on Laser and Fiber-Optical Networks Modeling (Cat. No.03TH8697), 2003, p. 157 of x+302 pp.
ISBN: 0 7803 7709 5
Price: 0 7803 7709 5/2003/$17.00
Published by: IEEE, Piscatawy, NJ, USA
Conference: Proceedings LFNM 2003. 5th International Workshop on Laser and Fiber-Optical Networks Modeling, Alushta, Crimea, Ukraine, 19-20 Sept. 2003
Sponsor(s): IEEE LEOS Ukraine Chapter; Opt. Soc. American, OSA; Union Radio-Sci. Int., URSI; Sci. & Technol. Center in Ukraine, STCU; IEEE AP/MTT/ED/AES/GRS/NPS/EMB East Ukraine Joint Chapter; IEEE Ukraine Sect.; Ukrainian Chapter of SPIE

DT Conference; Conference Article

TC Experimental

CY United States

LA English

AB Summary form only given. Optical wave packet which is localized both in space in the form of the narrow beam and in time in the form of the short pulse is called 'light bullet'. Power ***ultra*** ***short*** laser pulse with Gaussian spatial-temporal profile induces in the ***waveguide*** with Kerr nonlinearity light field with the same profile. Other nonlinearities have finite time of the response and cannot determine properties of squeezed, in space and time, light bullets. It is known that in Kerr nonlinear medium only 1-dimensional spatial solitons are stable. Nevertheless, soliton squeezing process takes finite period of time and some distance in space. Nowadays laser pulses of ***femtosecond*** and even ***picosecond*** range are available. For the case of ordinary spatial solitons the estimation for the focal length of the collapse is well-known and is of the order of 10-3 cm. Spatial extension of the ***femtosecond*** light bullet is by 3-4 orders of magnitude less than the focal length of the collapse. Thus light bullet just doesn't have enough time to collapse at such a short distance and the focus of the collapse moves all the time at some distance ahead of the light bullet along with the bullet propagating in the ***waveguide*** . Our studies show that in the cases of spherically symmetrical and ***elliptical*** ***waveguides*** both transverse dimensions and temporal duration of the light bullet slightly oscillates along with the pulse propagating in the ***waveguide*** . This confirms stability of the light bullets in the ***waveguides*** with Kerr nonlinearity

CC A4265J Beam trapping, self focusing, thermal blooming, and related effects; A4280L Optical waveguides and couplers; A0660J High-speed techniques (microsecond or shorter); A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4280W Ultrafast optical techniques; A4265S Optical solitons; A4225B Optical propagation, transmission and absorption; B4340J Optical self-focusing and related effects; B4130 Optical waveguides; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4340S Optical solitons

CT high-speed optical techniques; light propagation; optical Kerr effect; optical solitons; optical squeezing; optical ***waveguides*** ; spatiotemporal phenomena

ST light bullets; cubic nonlinear Kerr effect; optical wave packet; power ultra short laser pulse; Gaussian spatial-temporal profile; spatial solitons; squeezing process; femtosecond laser pulses; picosecond laser pulses; symmetrical waveguides; elliptical waveguides

L5 ANSWER 23 OF 33 INSPEC (C) 2006 IET on STN

AN 2003:7515974 INSPEC DN A2003-05-4260F-020; B2003-03-4330B-023 <<LOGINID::20060804>>

TI Pulse contrast enhancement of high-energy pulses using a gas-filled hollow ***waveguide***

AU Homoelle, D.; Foster, M.; Gaeta, A.L.; (Sch. of Appl. & Eng. Phys., Cornell Univ., Ithaca, NY, USA), Yanovsky, V.; Mourou, G.

SO Postdeadline Papers. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Conference Edition (IEEE Cat. No.02CH37337), vol.2, 2002, p. CPDA4-1-3 vol.2 of (670+96) pp., 5 refs.
ISBN: 1 55752 705 9
Published by: Opt. Soc. America, Washington, DC, USA
Conference: Postdeadline Papers. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Conference Edition, Long Beach, CA, USA, 19-24 May 2002
Sponsor(s): IEEE/Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America;

Quantum Electron. Div. Eur. Phys. Soc.; Opt. Soc. Japanese Quantum Electron. Joint Group
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB We demonstrate theoretically and experimentally that the technique of nonlinear ***ellipse*** rotation in a gas-filled hollow ***waveguide*** greatly improves the contrast of microjoule-to-millijoule ***femtosecond*** laser pulses. This technique has numerous advantages over competing techniques and will facilitate the development of the next generation of ultra-high-peak power ***femtosecond*** laser systems
CC A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4265 Nonlinear optics; A4225J Optical polarization; A3345D Optical activity, optical rotation, circular dichroism in molecules; A4280L Optical waveguides and couplers; A4260H Laser beam characteristics and interactions; A4280W Ultrafast optical techniques; A5170 Optical phenomena in gases; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4340 Nonlinear optics and devices; B4130 Optical waveguides
CT high-speed optical techniques; laser beams; nonlinear optics; optical rotation; optical ***waveguides***
ST pulse contrast enhancement; high-energy pulses; gas-filled hollow waveguide; nonlinear ellipse rotation; microjoule-to-millijoule femtosecond laser pulses; ultra-high-peak power femtosecond laser systems

L5 ANSWER 24 OF 33 INSPEC (C) 2006 IET on STN
AN 2003:7514745 INSPEC DN A2003-05-4280L-004; B2003-03-4130-006 <<LOGINID::20060804>>
TI Nonlinear guided propagation of few-optical-cycle laser pulses with arbitrary polarization states
AU Stagira, S.; Priori, E.; Sansone, G.; Nisoli, M.; De Silvestri, S.; (Dipt. di Fisica, Inst. di Fotonica e Nanotecnologie-CNR, Milano, Italy), Gadermaier, C.
SO Physical Review A (Atomic, Molecular, and Optical Physics) (Sept. 2002), vol.66, no.3, p. 33810-18, 17 refs.
CODEN: PLRAAN, ISSN: 1050-2947
SICI: 1050-2947(200209)66:3L.33810:NGPO;1-#
Price: 1050-2947/2002/66(3)/033810(8)/$20.00
Doc.No.: S1050-2947(02)13708-5
Published by: APS through AIP, USA
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB The physics of guided nonlinear propagation of ***ultrashort*** pulses with an arbitrary polarization state is investigated down to the few-cycle regime. The electric field of the pulse is described in terms of monochromatic circularly polarized waves; numerical simulations for the propagation of ***ultrashort*** pulses with ***elliptical*** and circular polarization are presented and discussed. The theoretical results can be applied to the compression of high-energy laser pulses with an arbitrary polarization state. An experimental demonstration of the compression of circularly polarized pulses is presented
CC A4280L Optical waveguides and couplers; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4280W Ultrafast optical techniques; A4260H Laser beam characteristics and interactions; A0260 Numerical approximation and analysis; B4130 Optical waveguides; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B0290 Numerical analysis
CT high-speed optical techniques; laser beams; light polarisation; nonlinear media; numerical analysis; optical pulse compression; optical ***waveguide*** theory
ST nonlinear guided propagation; few-optical-cycle laser pulses; arbitrary polarization states; guided nonlinear propagation; ultrashort pulses; few-cycle regime; numerical simulations; circular polarization; elliptical polarization; high-energy laser pulses; arbitrary polarization state

L5 ANSWER 25 OF 33 INSPEC (C) 2006 IET on STN
AN 2003:7489409 INSPEC DN A2003-03-4260F-018; B2003-02-4330B-022 <<LOGINID::20060804>>
TI Pulse contrast enhancement of high-energy pulses by use of a gas-filled

hollow ***waveguide***
AU Homoelle, D.; Gaeta, A.L.; (Sch. of Appl. & Eng. Phys., Cornell Univ., Ithaca, NY, USA), Yanovsky, V.; Mourou, G.
SO Optics Letters (15 Sept. 2002), vol.27, no.18, p. 1646-8, 15 refs.
CODEN: OPLEDP, ISSN: 0146-9592
SICI: 0146-9592(20020915)27:18L.1646:PCEH;1-4
Price: 0146-9592/02/181646-03$15.00/0
Published by: Opt. Soc. America, USA
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB Using nonlinear ***ellipse*** rotation in a gas-filled hollow ***waveguide*** , we have increased the pulse contrast of a microjoule ***femtosecond*** laser pulse by several orders of magnitude. This scheme offers a number of advantages over competing techniques, including a high degree of tunability that allows for a broad range of input pulse parameters, higher throughput, greater stability, and an output pulse with high spatial quality that is compressible to a quarter of the original temporal width
CC A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4265 Nonlinear optics; A4260H Laser beam characteristics and interactions; A4280W Ultrafast optical techniques; A4280L Optical waveguides and couplers; A5170 Optical phenomena in gases; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4340 Nonlinear optics and devices; B4130 Optical waveguides
CT laser beams; laser tuning; nonlinear optics; optical pulse generation; optical ***waveguides***
ST pulse contrast enhancement; high-energy pulses; gas-filled hollow waveguide; nonlinear ellipse rotation; microjoule femtosecond laser pulse; tunability; input pulse parameters; noble gas; stability; output pulse; high spatial quality; original temporal width

L5 ANSWER 26 OF 33 INSPEC (C) 2006 IET on STN
AN 2003:7484351 INSPEC DN A2003-03-4280F-001; B2003-02-4140-002 <<LOGINID::20060804>>
TI Reduction in dispersion of silica-based AWG using photosensitive phase ***trimming*** technique
AU Abe, M.; Takada, K.; Tanaka, T.; Itoh, M.; Kitoh, T.; Hibino, Y. (NTT Photonics Labs., Kanagawa, Japan)
SO Electronics Letters (5 Dec. 2002), vol.38, no.25, p. 1673-5, 8 refs.
CODEN: ELLEAK, ISSN: 0013-5194
SICI: 0013-5194(20021205)38:25L.1673:RDSB;1-L
Price: 0013-5194/02/$20.00
Published by: IEE, UK
DT Journal
TC Practical; Experimental
CY United Kingdom
LA English
AB The dispersion of a 25 GHz-spaced 64-channel silica-based arrayed ***waveguide*** grating (AWG) is reduced using a photosensitive phase ***trimming*** technique. The dispersion at the centre wavelength was reduced from about 170 to 30 ***ps*** /nm. Furthermore, we confirmed the same improvement in the dispersion for all 64 ports. The ***trimming*** technique is useful for realising fine AWGs with low crosstalk and dispersion
CC A4280F Gratings, echelles; A4282 Integrated optics; A4280L Optical waveguides and couplers; A4280S Optical communication devices; A4285D Optical fabrication, surface grinding; B4140 Integrated optics; B4130 Optical waveguides; B6260M Multiplexing and switching in optical communication
CT arrayed ***waveguide*** gratings; demultiplexing equipment; multiplexing equipment; optical communication equipment; optical crosstalk; optical dispersion; optical fabrication; optical planar ***waveguides*** ; silicon compounds
ST silica-based AWG; photosensitive phase trimming technique; dispersion reduction; 25 GHz-spaced 64-channel silica-based arrayed waveguide grating; centre wavelength; fine AWG; low crosstalk; multiplexers; demultiplexers; planar lightwave circuit; SiO2
CHI SiO2 int, O2 int, Si int, O int, SiO2 bin, O2 bin, Si bin, O bin
ET O; Si; O*Si; SiO; Si cp; cp; O cp

L5 ANSWER 27 OF 33 INSPEC (C) 2006 IET on STN

AN 2003:7483566 INSPEC DN A2003-03-4262A-051; B2003-02-4360B-056 <<LOGINID::20060804>>
TI Contrasts in writing photonic structures with ultrafast and ultraviolet lasers
AU Coric, D.; Herman, P.R.; Chen, K.P.; Wei, X.M.; (Dept. of Electr. & Comput. Eng., Toronto Univ., Ont., Canada), Corkum, P.B.; Bhardwaj, V.R.; Rayner, D.M.
SO Proceedings of the SPIE - The International Society for Optical Engineering (2002), vol.4638, p. 77-84, 19 refs.
CODEN: PSISDG, ISSN: 0277-786X
SICI: 0277-786X(2002)4638L.77:CWPS;1-H
Price: 0277-786X/02/$15.00
Published by: SPIE-Int. Soc. Opt. Eng, USA
Conference: Optical Devices for Fiber Communication III, San Jose, CA, USA, 21-22 Jan. 2002
Sponsor(s): SPIE
DT Conference; Conference Article; Journal
TC Practical; Experimental
CY United States
LA English
AB This paper contrasts the photosensitivity responses and processing windows between two extreme approaches in laser structuring of photonic devices: ultrafast and deep-ultraviolet F2 lasers. Low-loss single mode ***waveguides*** were formed by scanning in fused silica the focused light from a 50- ***fs*** Ti:sapphire laser and a 157-nm 15-ns F2 laser. The latter source represents the first known demonstration of writing buried ***waveguide*** structures in bulk glass without driving ultrafast-laser interaction physics. For the ultrafast laser, a refractive index change of 1.0.times.10-3 was noted after an accumulated fluence of 10 kJ/cm2, a high scanning speed of 100 .mu.m/s, and 100-kHz repetition rate. Longitudinal and side-writing techniques were employed and ***waveguides*** were characterized at 0.633-.mu.m and 1.5-.mu.m wavelengths. For the F2 laser, photosensitivity responses were similar in germanosilicate planar ***waveguides*** , and 10-fold smaller in fused silica. ***Waveguide*** writing speeds were 100-fold slower than for the ultrafast laser because of the smaller 100-Hz repetition rate. Overall, ultrafast lasers and ultraviolet lasers offer strong photosensitivity responses in silica-based glasses that address niche applications in fabricating complex three-dimensional photonic structures and ***trimming*** optical circuits for telecommunication applications
CC A4262A Laser materials processing; A4255R Lasing action in other solids; A4255G Excimer lasers; A4283 Micro-optical devices and technology; A4285D Optical fabrication, surface grinding; A4282 Integrated optics; A4280L Optical waveguides and couplers; A4270C Optical glass; B4360B Laser materials processing; B4320G Solid lasers; B4320C Gas lasers; B8620 Power applications in manufacturing industries; B2575F Fabrication of micromechanical devices; B0170G General fabrication techniques; B4145 Micro-optical devices and technology; B4140 Integrated optics; B4130 Optical waveguides; B4110 Optical materials; E1520A Machining; E3644N Optoelectronics manufacturing
CT excimer lasers; laser beam machining; micro-optics; micromachining; optical fabrication; optical glass; optical planar ***waveguides*** ; sensitivity; solid lasers
ST photonic structures writing; ultrafast lasers; ultraviolet lasers; photosensitivity responses; processing windows; low-loss single mode waveguides; fused silica; focused light; buried waveguide structures; bulk glass; ultrafast laser; refractive index change; germanosilicate planar waveguides; three-dimensional photonic structures; optical circuits trimming; laser microfabrication; F2 laser; Ti:sapphire laser; telecommunication applications; 50 fs; 157 nm; 15 ns; 0.633 micron; 1.5 micron; F2
CHI F2 el, F el; Al2O3 ss, Al2 ss, Al ss, O3 ss, Ti ss, O ss, Ti el, Ti dop
PHP time 5.0E-14 s; wavelength 1.57E-07 m; time 1.5E-08 s; wavelength 6.33E-07 m; wavelength 1.5E-06 m
ET O; Al; Ti; F2

L5 ANSWER 28 OF 33 INSPEC (C) 2006 IET on STN
AN 2002:7196362 INSPEC DN A2002-07-4282-015; B2002-04-4140-004 <<LOGINID::20060804>>
TI Photosensitivity in glasses: comparing ultrafast lasers with vacuum-ultraviolet lasers
AU Herman, P.R.; Chen, K.P.; Ng, S.; Zhang, J.; Coric, D.; (Dept. of Electr. & Comput. Eng., Toronto Univ., Ont., Canada), Corkum, P.;

Mehendale, M.; Naumov, A.; Rayner, D.
SO Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest (IEEE Cat. No.01CH37170), 2001, p. 490-1 of 604+72 post deadline papers pp., 12 refs.
ISBN: 1 55752 662 1
Published by: Opt. Soc. America, Washington, DC, USA
Conference: CLEO 2001. Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest, Baltimore, MD, USA, 6-11 May 2001
Sponsor(s): IEEE/Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America; Quantum Electron. Division of the Eur. Phys. Soc.; Opt. Soc. Japanese Quantum Electron. Joint Group
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB Summary form only given. Laser microfabrication technology is a promising photonics processing approach with parallels to the current use of lasers in semiconductor lithography, ***trimming*** , repair, and inspection. To this end, our groups are exploring two extreme forefronts of laser technology - ultrafast (UF) and deep-ultraviolet (UV) lasers - to drive strong interactions in transparent materials for shaping photonic structures. We recently provided head-to-head comparisons of F2-laser and 1- ***ps*** UF-laser approaches in smooth surface microsculpting of optical glasses, and introduced a new UF-laser processing mode called burst machining that offers crack-free ablation. In this paper, we present an extension to more subtle laser-glass interactions that drive internal refractive-index changes. Photosensitivity processing rates, spatial resolution, and processing windows for both laser types are discussed together with the prospects for printing and ***trimming*** of optical ***waveguides*** and circuits
CC A4282 Integrated optics; A4285D Optical fabrication, surface grinding; A4281B Optical fibre fabrication, cladding, splicing, joining; A4280L Optical waveguides and couplers; A4262A Laser materials processing; A4280F Gratings, echelles; A4280W Ultrafast optical techniques; A4283 Micro-optical devices and technology; B4140 Integrated optics; B4145 Micro-optical devices and technology; B4125 Fibre optics; B4130 Optical waveguides; B4360B Laser materials processing
CT Bragg gratings; high-speed optical techniques; laser ablation; laser beam machining; micro-optics; micromachining; multiphoton processes; optical fabrication; optical fibre fabrication; optical glass; optical planar ***waveguides*** ; refractive index; ultraviolet radiation effects
ST laser-glass interactions; internal refractive-index changes; photosensitivity processing; smooth surface microsculpting; ultrafast laser processing; vacuum-ultraviolet laser processing; burst machining; crack-free ablation; spatial resolution; processing windows; trimming; printing; optical waveguides; photonic structures shaping; UV-grade fused silica cover slips; planar waveguides; polished fused silica blanks; single-mode optical fibers; phase-grating; multiphoton ionization
ET F2

L5 ANSWER 29 OF 33 INSPEC (C) 2006 IET on STN
AN 2001:6853019 INSPEC DN A2001-07-5250-010 <<LOGINID::20060804>>
TI System performance and experiments with the 110 GHz microwave installation on the DIII-D tokamak
AU Lohr, J.; Callis, R.W.; Gorelov, Y.; Legg, R.A.; Luce, T.C.; Ponce, D.; Prater, R.; Petty, C.C.; (Gen. Atomics, San Diego, CA, USA), Baity, F.W. Jr.; Barber, G.C.
SO 25th International Conference on Infrared and Millimeter Waves (Cat. No.00EX442), 2000, p. 93 of xxiv+497 pp., 0 refs.
Editor(s): Liu, S.; Shen, X.
ISBN: 0 7803 6513 5
Price: 0 7803 6513 5/2000/$10.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2000 25th International Conference on Infrared and Millimeter Waves Conference Digest, Beijing, China, 12-15 Sept. 2000
Sponsor(s): Nat. Sci. Found. China (NSFC); Chinese Inst. Electron. (CIE); Univ. Electron. Sci. & Technol. China (UESTC); IEEE, MTT
DT Conference; Conference Article
TC Application; Practical; Experimental
CY United States

LA English
AB Summary form only given. A powerful microwave system operating at the second harmonic of the electron cyclotron frequency has been commissioned on the DIII-D tokamak. Two Gycom gyrotrons each of which generates about 750 kW for 1-2 s pulses, and two CPI gyrotrons with diamond windows and rated at 0.9-1.0 MW for 10 s pulses are in service. Two additional CPI 1.0 MW gyrotrons are being installed and a third Gycom gyrotron is available as a spare. The launcher system on the tokamak low field side can be scanned poloidally in the tokamak upper half plane and the launchers on two of the transmission lines can also be scanned toroidally in both the co- and counter-current drive directions. The ***elliptical*** polarization of the injected rf beam is remotely controllable. Phase retrieval and correction using a two mirror relay was employed for the Gycom gyrotrons, which generate flattened rf beam profiles, and also for one of the CPI gyrotrons with a Gaussian beam. A single ellipsoidal mirror was used to couple one of the CPI Gaussian beams to the ***waveguides*** and the beam quality for this arrangement was excellent. The primary mission of the microwave system is to permit current profile control leading to the improved performance of advanced tokamak operation in quasi-steady state. Initial experiments on current drive both near and away from the tokamak axis and on transport have been performed. The system performance and initial experimental results are presented
CC A5250G Plasma heating; A5255G Plasma in torus (stellarator, tokamak, etc.)
CT gyrotrons; millimetre wave generation; millimetre wave tubes; plasma radiofrequency heating; Tokamak devices
ST microwave installation; second harmonic; electron cyclotron frequency; Gycom gyrotrons; CPI gyrotrons; low field side; tokamak upper half plane; counter-current drive; co-drive direction; elliptical polarization; two mirror relay; Gaussian beam; beam quality; current profile control; DIII-D tokamak; 110 GHz; 750 kW; 1 to 2 ps; 0.9 to 1.0 MW; 10 s
PHP frequency 1.1E+11 Hz; power 7.5E+05 W; time 1.0E-12 to 2.0E-12 s; power 9.0E+05 to 1.0E+06 W; time 1.0E+01 s
ET D

L5 ANSWER 30 OF 33 INSPEC (C) 2006 IET on STN
AN 1999:6123721 INSPEC DN A1999-03-4280L-012; B1999-02-4130-012 <<LOGINID::20060804>>
TI Writing ***waveguides*** and gratings in silica and related materials by a ***femtosecond*** laser
AU Hirao, K.; (Dept. of Mater. Chem., Kyoto Univ., Japan), Miura, K.
SO Journal of Non-Crystalline Solids (Oct. 1998), vol.239, no.1-3, p. 91-5, 3 refs.
CODEN: JNCSBJ, ISSN: 0022-3093
SICI: 0022-3093(199810)239:1/3L.91:WWGS;1-T
Price: 0022-3093/98/$19.00
Doc.No.: S0022-3093(98)00755-8
Published by: Elsevier, Netherlands
Conference: Williamsburg Meetings, Williamsburg, VA, USA, 25-31 Oct. 1997
DT Conference; Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB With the goal of creating various optical glass devices for the telecommunications industry, the effects of 810 nm, ***femtosecond*** laser radiation on various glasses were investigated. By focusing the laser beam via a microscope objective, transparent but visible, round- ***elliptical*** damage lines were successfully written inside high silica, borate, soda-lime-silicate, fluoride and chalcogenide glasses. Microscopic ellipsometric measurements of the damaged region in pure and Ge-doped silica glasses showed refractive index increases of 0.01 to 0.035. The formation of several types of defects, including Si E' or Ge E' centers, non-bridging oxygen hole centers, and peroxy radicals, was also detected in addition to the identification. These results suggest that multi-photon interactions occurs in the glasses and that it is possible to write three-dimensional optical circuits in bulk glasses via such a focused laser beam technique
CC A4280L Optical waveguides and couplers; A4270C Optical glass; A4280F Gratings, echelles; A7820D Optical constants and parameters (condensed matter); A6180B Ultraviolet, visible and infrared radiation effects; B4130 Optical waveguides
CT chalcogenide glasses; diffraction gratings; laser beam applications;

optical glass; optical ***waveguides*** ; refractive index
ST waveguide writing; grating writing; silica; femtosecond laser radiation; microscope objective; transparent visible round-elliptical damage lines; silica glass; borate glass; soda-lime-silicate glass; fluoride glass; chalcogenide glass; ellipsometric measurements; pure silica; Ge-doped silica; refractive index; defect formation; Si E' centers; Ge E' centers; non-bridging oxygen hole centers; peroxy radicals; multi-photon interactions; 3D optical circuits; focused laser beam technique; bulk glasses; 810 nm; 100 fs; SiO2; SiO2:Ge; B2O3; Na2O-CaO-SiO2
CHI SiO2 bin, O2 bin, Si bin, O bin; SiO2:Ge ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, Ge el, Ge dop; B2O3 bin, B2 bin, O3 bin, B bin, O bin; Na2OCaOSiO2 ss, SiO2 ss, Na2 ss, Ca ss, Na ss, O2 ss, Si ss, O ss; F bin; F ss
PHP wavelength 8.1E-07 m; time 1.0E-13 s
ET D; O; Ge*O; O2:Ge; Ge doping; doped materials; Ca*O*Si; Ca sy 3; sy 3; O sy 3; Si sy 3; CaO; Ca cp; cp; O cp; SiO2; Si cp; O-CaO-SiO2; Si; Ge; O*Si; SiO; B; OCaOSiO; Na; Ca

L5 ANSWER 31 OF 33 INSPEC (C) 2006 IET on STN
AN 1996:5448198 INSPEC DN A1997-02-4280L-022; B1997-01-4130-034 <<LOGINID::20060804>>
TI Writing ***waveguides*** in glass with a ***femtosecond*** laser
AU Davis, K.M.; Miura, K.; Sugimoto, N.; Hirao, K. (Hirao Active Glass Project, Res. Dev. Corp. of Japan, Kyoto, Japan)
SO Optics Letters (1 Nov. 1996), vol.21, no.21, p. 1729-31, 10 refs.
CODEN: OPLEDP, ISSN: 0146-9592
SICI: 0146-9592(19961101)21:21L.1729:WWGW;1-L
Price: 0146-9592/96/211729-03$10.00/0
Published by: Opt. Soc. America, USA
DT Journal
TC Experimental
CY United States
LA English
AB With the goal of being able to create optical devices for the telecommunications industry, we investigated the effects of 810-nm, ***femtosecond*** laser radiation on various glasses. By focusing the laser beam through a microscope objective, we successfully wrote transparent, but visible, round- ***elliptical*** damage lines inside high-silica, borate, soda lime silicate, and fluorozirconate (ZBLAN) bulk glasses. Microellipsometer measurements of the damaged region in the pure and Ge-doped silica glasses showed a 0.01-0.035 refractive-index increase, depending on the radiation dose. The formation of several defects, including Si E' or Ge E' centers, nonbridging oxygen hole centers, and peroxy radicals, was also detected. These results suggest that multiphoton interactions occur in the glasses and that it may be possible to write three-dimensional optical circuits in bulk glasses with such a focused laser beam technique
CC A4280L Optical waveguides and couplers; A4280S Optical communication devices; A4280W Ultrafast optical techniques; A4270C Optical glass; A4282 Integrated optics; A4260H Laser beam characteristics and interactions; A6180B Ultraviolet, visible and infrared radiation effects; A4260K Laser beam applications; A4285D Optical fabrication, surface grinding; A7820D Optical constants and parameters (condensed matter); A0760F Optical polarimetry and ellipsometry; B4130 Optical waveguides; B6260 Optical communication; B4110 Optical materials; B4140 Integrated optics; B4330 Laser beam interactions and properties; B4360 Laser applications; B7320P Optical variables measurement
CT ellipsometry; high-speed optical techniques; integrated optics; laser beam applications; laser beam effects; optical communication equipment; optical fabrication; optical focusing; optical glass; optical ***waveguides*** ; refractive index; transparency
ST femtosecond laser; optical devices; telecommunications industry,; femtosecond laser radiation; laser beam focusing; microscope objective; transparent visible round-elliptical glass damage line writing; high-silica glasses; borate glass; soda lime silicate glass; fluorozirconate glass; ZBLAN bulk glasses; microellipsometer measurements; damaged region; Ge-doped silica glasses; refractive-index increase; radiation dose; optical glass waveguide defect formation; nonbridging oxygen hole centers; peroxy radicals; multiphoton interactions; 3D optical circuit writing; 810 nm; ZBLAN; SiO2-B2O3; ZrF4-BaF2-LaF3-AlF3-NaF
CHI SiO2 int, O2 int, Si int, O int, SiO2 ss, O2 ss, Si ss, O ss; ZrF4-BaF2-LaF3-AlF3-NaF int, AlF3 int, BaF2 int, LaF3 int, ZrF4 int, NaF

int, Al int, Ba int, F2 int, F3 int, F4 int, La int, Na int, Zr int, F int, AlF3 bin, BaF2 bin, LaF3 bin, ZrF4 bin, NaF bin, Al bin, Ba bin, F2 bin, F3 bin, F4 bin, La bin, Na bin, Zr bin, F bin; SiO2-B2O3 int, B2O3 int, SiO2 int, B2 int, O2 int, O3 int, Si int, B int, O int, B2O3 bin, SiO2 bin, B2 bin, O2 bin, O3 bin, Si bin, B bin, O bin
PHP wavelength 8.1E-07 m
ET D; B*O; B2O3; B cp; cp; O cp; O2-B2O3; F; Ba*F; BaF; Ba cp; F cp; F*La; LaF; La cp; Al*F; AlF; Al cp; F*Na; NaF; Na cp; O; Si; O*Si; SiO; Si cp; F*Zr; ZrF; Zr cp; Al; Ba; La; Na; Zr; B2O; B; Ge

L5 ANSWER 32 OF 33 INSPEC (C) 2006 IET on STN
AN 1991:3845983 INSPEC DN A1991-041540; B1991-025167 <<LOGINID::20060804>>
TI Optical solitons propagation in an ***elliptical*** core fiber
AU Shcherbakov, A.S.; Selishchev, A.V. (Dept. of Radiophys., Leningrad Polytech. Inst., USSR)
SO Proceedings of the SPIE - The International Society for Optical Engineering (1990), vol.1319, p. 103-4, 0 refs.
CODEN: PSISDG, ISSN: 0277-786X
Conference: Optics in Complex Systems, Garmisch-Partenkirchen, West Germany, 5-10 Aug. 1990
Sponsor(s): SPIE; OSA; EPS; et al
DT Conference; Conference Article; Journal
TC Theoretical
CY United States
LA English
AB ***Picosecond*** solitons dynamics in an ***elliptical*** core fiber can be described by nonlinear combined equations according to a two-dimensional model of a ***waveguide*** . Averaging over the transverse dimensions, neglecting the oscillatory term and keeping the core ellipticity and the spectrum dependence of ***waveguide*** 's characteristics terms, the authors find an analytical solution of these equations. The consideration is acceptable for various situations when the core ellipticity is high enough and the spatial period of polarisation beating is much less than the soliton forming length
CC A4281D Optical propagation, dispersion and attenuation in fibres; A4280W Ultrafast optical techniques; A4265 Nonlinear optics; B4125 Fibre optics; B4340 Nonlinear optics and devices
CT high-speed optical techniques; nonlinear optics; optical fibres; solitons
ST optical soliton propagation; elliptical core fiber; nonlinear combined equations; two-dimensional model; analytical solution; polarisation beating; soliton forming length

L5 ANSWER 33 OF 33 INSPEC (C) 2006 IET on STN
AN 1990:3738301 INSPEC DN B1990-071963 <<LOGINID::20060804>>
TI 128-channel polarization-insensitive frequency-selection-switch using high-silica ***waveguides*** on Si
AU Takato, N.; Sugita, A.; Onose, K.; Okazaki, H.; Okuno, M.; Kawachi, M.; (NTT Opto-Electron. Lab., Ibaraki, Japan), Oda, K.
SO IEEE Photonics Technology Letters (June 1990), vol.2, no.6, p. 441-3, 7 refs.ISSN: 1041-1135
Price: 1041-1135/90/0600-0441$01.00
DT Journal
TC Experimental
CY United States
LA English
AB A 128-channel polarization-insensitive frequency-selection-switch (***FS*** -SW) with 10-GHz frequency spacing is discussed. The ***FS*** -SW was fabricated on Si using low-loss GeO2-doped high-silica ***waveguides*** , and its frequency-insensitive operation was attained by the laser ***trimming*** adjustment of a-Si film which controls ***waveguide*** birefringence. The fiber-to-fiber loss of the transmitted channel was 6.7 dB in the pigtailed ***FS*** -SW and the total crosstalk level was less than -13 dB. By using this ***FS*** -SW, a 100-channel optical frequency division multiplexing (FDM) transmission-distribution experiment at 622 M b/s over a 50-km fiber length was achieved
CC B6260 Optical communication; B4130 Optical waveguides; B4140 Integrated optics
CT birefringence; crosstalk; integrated optics; optical losses; optical switches; optical ***waveguides***
ST polarization-insensitive frequency-selection-switch; high-silica waveguides; 128-channel; frequency spacing; low-loss; laser trimming

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       adjustment; a-Si film; waveguide birefringence; fiber-to-fiber loss;
       transmitted channel; pigtailed FS-SW; crosstalk level; optical frequency
       division multiplexing; FDM; transmission-distribution experiment; fiber
       length; 6.7 dB; 622 Mbit/s; 50 km; Si
CHI    GeO2 ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, GeO2 bin, Ge bin, O2 bin, O
       bin, GeO2 dop, Ge dop, O2 dop, O dop; Si int, Si el
PHP    loss 6.7E+00 dB; bit rate 6.22E+08 bits/s; distance 5.0E+04  m
ET     Si; F*S*W; FS; F cp; cp; S cp; SW; W cp; FS-SW; O; O*Si; SiO; Si cp; O
       cp; Ge; Ge*O; GeO; Ge cp; GeO2; B


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     FILE 'CAPLUS, INSPEC' ENTERED AT 16:18:20 ON 04 AUG 2006
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L4          999 S (ELLIPTICAL OR OVAL OR OVOID OR ELLIPSE OR PAINTING OR TRIMMI
L5           33 S (FS OR PS OR PICOSECOND OR FEMTOSECOND OR ULTRASHORT OR (ULTR

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